CALIFORNIA
OIL WORLD
and Petroleum Industry

Tulsa Public Library
Technical Dept.
Tulsa, Okla.
267-F

The BAKER ROTARY WALL SCRAPER

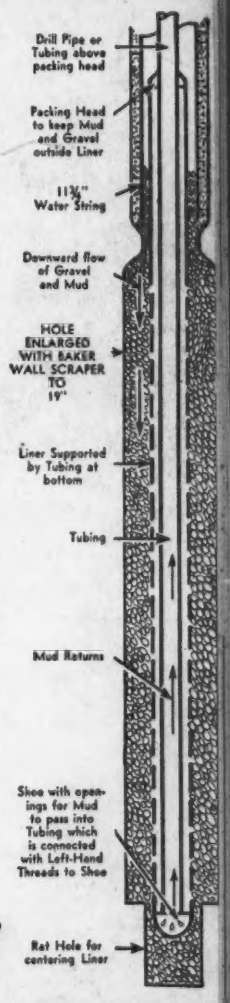
PIONEERED IN GRAVEL PACKING 6 YEARS AGO

BAKER ROTARY WALL SCRAPER

BAKER WALL SCRAPERS have been used for Gravel Packing for the past six years in completing water wells . . . ***and in oil wells.*** In fact, in 1931, the Baker No. 8 Wall Scraper, which has an expansion of 36 inches, was developed especially for Gravel Packing water wells, and soon after ***oil wells,*** and has since proved the ideal tool for this purpose.

AMAZING REAMING CAPACITY . . . One of the outstanding features of this remarkable tool is its great reaming capacity in relation to the size of the tool. It has an expansion range of from 4 inches to 36 inches, by using only six Wall Scraper Bodies. Tremendous strength, resulting from its correct design and the use of alloy steels, combined with minimum over-all dimensions, make it possible to run the tool through casing of comparatively small size, then to expand the blades and scrape the open hole below the casing to a large diameter.

A TOOL OF MANY USES . . . While Hole Enlarging for Gravel Packing constitutes an important modern application for the Baker Wall Scraper, it is only ONE of a number of OTHER equally important uses.


Drill Pipe or Tubing above packing head
Packing Head to keep Mud and Gravel outside Liner
11¾" Water String
Downward flow of Gravel and Mud
HOLE ENLARGED WITH BAKER WALL SCRAPER TO 19"
Liner Supported by Tubing at bottom
Tubing
Mud Returns
Shoe with openings for Mud to pass into Tubing which is connected with Left-Hand Threads to Shoe
Rat Hole for centering Liner

A Typical Gravel Packing Job Showing Hole Enlargement Done With a Baker Wall Scraper.

OTHER APPLICATIONS INCLUDE:

- You can bring in many a well more easily and in less time by scraping the rotary mud from the face of the oil sand.
- Scrape a wide shoulder as the first step in bringing a crooked hole back to vertical.
- Enlarge the hole to set a larger size liner.
- Insure water shut-off . . . by bottlenecking or enlarging the diameter of the hole above the point where the casing shoe will be positioned to provide ample space for cement entirely around the shoe and casing.
- When bottom water shut-off fails, wall scrape to size of original hole, or larger (after drilling out old cement) . . . then recement.
- Take actual core samples from the sidewalls of a previously drilled hole by substituting Core Sampler Blades for the regular Wall Scraper Blades.

BAKER GIVES YOU SAFETY AND RESULTS

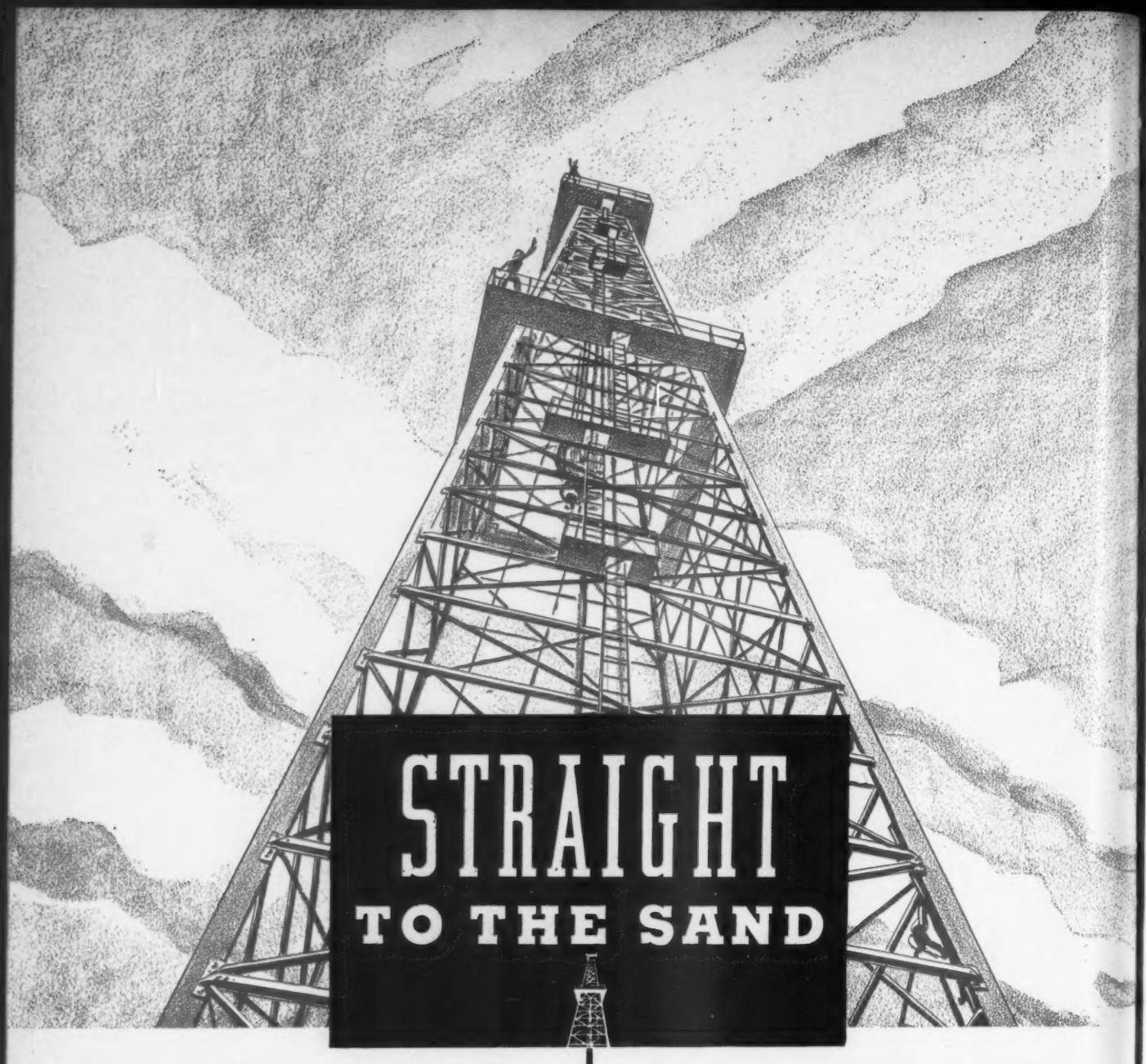
The Safety of the Baker Wall Scraper has been demonstrated in thousands of successful runs made in oil fields throughout the world under the most difficult operating conditions. To our knowledge, no Baker Wall Scraper has ever failed to come safely out of the hole.

BAKER OIL TOOLS, INC.
Telephone Jefferson 8211 – HUNTINGTON PARK, CALIFORNIA – 2959 E. Slauson Ave.
Telephone WAyside 2108 – HOUSTON PLANT AND OFFICE – 6023 Navigation Blvd.
MID-CONTINENT OFFICE AND WAREHOUSE:
Telephone 3-8083 – Tulsa, Oklahoma – 312 East Fourth Street
WEST TEXAS BRANCH OFFICE – Odessa, Texas – Telephone 217
EXPORT SALES OFFICE – Rm. 1914 – 19 Rector St., New York City – Tel. Digby 4-5515
ROCKY MOUNTAIN HEADQUARTERS – Tel. 2270–Casper, Wyoming – Box 1466

LOOK IN YOUR 1938 COMPOSITE CATALOG FOR . .

BAKER ROTARY WALL SCRAPER
ROTARY WALL SAMPLER

Vol 31
No. 2
Whole
No. 1505



STRAIGHT TO THE SAND

The only way to be sure of drilling ***straight*** down to the bottom is by ***knowing*** that the hole is ***straight*** at every foot. Drill bits follow the line of least resistance and are always ready to go off on a tangent for geologic or mechanical causes. ***Knowing*** the exact depth where this happens may save many feet of useless drilling together with the cost of casing, cementing and other expenses for a wandering hole. An uncharted well may bottom out of lease or in unproductive sand. Lane-Wells Surveys under Alexander Anderson patents make drilling ***visible*** all the way. They cover every condition and are always exact. They have protected and directed fourteen million feet of hole, saving millions of dollars by cutting out guess-work. Four types of surveys meet every requirement—in old wells or drilling wells—in cased or open holes.

To make full use of these surveys, Lewis Knuckle Joints and Kinsbach Whipstocks are offered for straightening crooked holes, side-tracking junk or directing the hole to any predetermined point underground. With these aids the entire job is kept under scientific and intelligent ***control*** at a cost that is a mere fraction of the time and money saved. Lane-Wells surveys mean straight drilling.

Lane-Wells Gun Perforator Service — Accepted in every oil field as the standard method of increasing production and saving wells from abandonment. Operated by trained crews. Used by prominent operators and proved effective by over 10,000 wells gun perforated.

Tomorrow's Tools Today

LANE-WELLS COMPANY

Technical Oil Field Services

GENERAL OFFICES AND FACTORY, 5610 So. Soto St., Los Angeles, Calif.
Alexander Anderson Division, 5619 South Soto Street, Los Angeles
Gulf Coast District, 2602 Wayside Drive, Houston
Mid-Continent District, 2 N. W. Tenth Street, Oklahoma City
EXPORT OFFICE 420 LEXINGTON AVENUE, NEW YORK CITY

Lane-Wells Packers and Liner Hangers— Packers that are absolutely dependable. Withstand maximum pressures. Packers have been set in wells for four years without vulcanizing to the casing. Easily set and easily removed. Lane-Wells Liner Hangers keep lines straight.

CALIFORNIA
OIL WORLD
and Petroleum Industry

THE AUTHORITY ON THE CALIFORNIA OIL INDUSTRY

JANUARY 20, 1938
VOL. 31 » NO. 2
WHOLE NO. 1505

IN THIS ISSUE

Modernize or Decay 3

The Texas Co.—Chapter V 4

Electrical Surveying Marks Engineering Progress 12

St. Helens Gets Deep Montebello Sand 18

The C. N. G. A. Section—Page 19

Simplified Absorption Control—By G. M. Liljenstein 20

Taft Chapter Holds Meeting 24

Purpose of Fluid Level Determinations 27

Laugh This Off 29

Los Angeles Basin Development 30

San Joaquin Valley Development 34

Coastal District Development 38

State Drilling Report 40

Suppliers' News 41-42-43-44

PETROLEUM PUBLISHERS, INC. PETROLEUM SECURITIES BUILDING
LOS ANGELES, CALIFORNIA - MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

WALTER C. MONROE	President and Editor	R. N. RICHEY	Assoc.-Editor
M. S. FOX	Vice-Pres.	DAVIS E. BROWNE	Secty.-Treas.
R. C. CONINE	Assoc.-Editor	GEORGE S. MacDONELL	Advertising Manager

L. O. MILLER, Manager, California Oil World News Service

California Oil World and Petroleum Industry is published twice a month at 536 Petroleum Securities Bldg., 714 West Olympic Blvd., Los Angeles, California. Entered as Second-class Matter January 1, 1937, at the post office at Los Angeles, California, under the Act of March 3, 1879. Subscription price: $1 per year in U. S. and possessions, $2 in foreign countries, including Canada. Member of the Audit Bureau of Circulations.

Announcing!

The NEW H. C. SMITH ROCK BIT has a side reamer cutter assembly set in the shank of the bit at right angles to the gauge cutters, thus stabilizing the bit and assuring full gauge and straight hole.

The NEW H. C. SMITH ROCK BIT with side reamer cutters is available through our CALIFORNIA RENTAL SERVICE in sizes of 10⅝", 12¼", and all of the larger sizes (17", 17½", 18" and 18⅝").

H C Smith Oil Tool Co.

Phone: THornwall 1184

CORNER AVALON & COMPTON BLVDS., COMPTON, CALIFORNIA

BAKERSFIELD VENTURA SANTA MARIA

CALIFORNIA
OIL WORLD
and Petroleum Industry

Modernize or Decay

Wildcatting in Kern county, near Wasco, an oil company has already passed the world's record producing depth and is drilling confidently for the "Rio Bravo" sand which it expects to find below 13,000 feet, nearly two and a half miles below the earth's surface. As this is written it appears that the courage and engineering advancement of this company will be rewarded.

Less spectacular, perhaps, but amazingly successful, are the latest developments in methods and equipment for drilling, surveying, and completing oil and gas wells in the proven Basin, Valley and Coastal fields. These advancements do not replace the older tried and tested procedures, nor do they in the least minimize the importance of the petroleum engineer, however much they facilitate the solution of drilling and operating problems. The new methods and the equipment developed for their application are largely supplementary and give the operator more complete well data, or permit him to drill and produce more efficiently and economically.

It requires a minimum of effort on the part of any active operator to keep informed of the technical and engineering progress made in his business. The operator who holds to obsolete drilling and operating practices and who scoffs at all new ideas, cannot hope to match the effectiveness of alert and progressive operators. The modern oil production picture has no place for "moss backs".

This is the fifth and final installment of the story of The Texas Co., and continues the series being presented by the California Oil World, on the companies making up the California oil industry of today

Clarence Olmsted

The Texas Company, California

Chapter V—Out Into The World—1928-1938

By Eugene I. Harrington

Since its beginnings at Spindletop in 1902, the Texas Corporation had grown steadily until it had become one of the leading integrated oil companies in the world. By 1927, it must have been very satisfying to the executives of that company to look back upon the achievements of a quarter of a century. From a spectacular gusher on a barren Texas hilltop, these men and their predecessors had built a company that stood high in international oil circles. In the early days they had concentrated on production but as automobiles increased in popularity the company had given more and more attention to the demands of the motoring public.

The Texaco Star

By 1927 their modern service stations dotted the highways of forty of the nation's 48 states. To all but a scant 10% of the country's population the lone red star of Texas stood more as the symbol of a great oil company than it did as the historic mark of the largest state in the Union. But there was still a marketing gap toward which the officials of the Texas Corporation had long cast covetous glances. This was the country beyond the Rocky Mountains; the great gasoline market of the West which on a per capi-

ta basis ranked well ahead of any other section in the country.

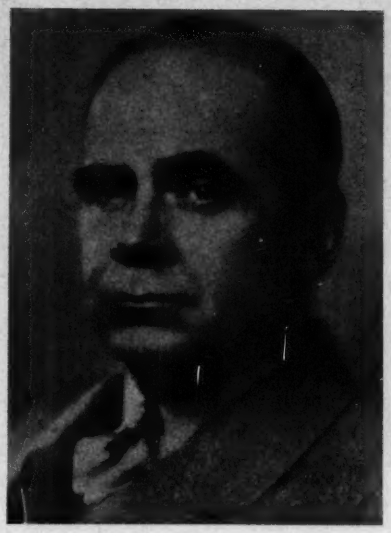
Looking West

Texas executives knew that reaching this rich oil market was not so easy as it looked. Since 1920 they had scouted the western slope and they were aware of the intense competition that the leading oil companies of California offered for a share of the gasoline dollars of western motorists who travelled the smooth, broad highways of the Pacific Coast. Some years before merger negotiations were entered into with the California Petroleum Corporation the men who headed the Texas Corporation had decided to seek a company of California origin and tradition with whom they might consolidate advantageously.

It was in this frame of mind that the Texas Corporation approached the men who stood at the helm of the California Petroleum Corporation. That company, they knew, came very close to answering their needs for entrance into the western market. It had been founded in 1908 when oil in California was still a struggling industry. It had been built slowly and conservatively and had only recently entered the marketing field. And best of all it was still directed by the man who had founded it 20 years before. Those easterners knew Tom O'Donnell personally and by reputation. Some of them had served with him on the oil administration board, of which he was chairman, during the World War. Others had been fellow directors with him on the Board of the American Petroleum Institute. And knowing O'Donnell, they reasoned correctly that any company he directed must be solid, substantial, and well thought of by its competitors on the West Coast.

Consolidation Advantages

When California Petroleum was approached by Texas Corporation with a view to working out a merger between the two companies, three men sat down to discuss the advantages that such a consolidation might offer their stockholders. Those men were Thomas A. O'Donnell, Chairman of the Board of Directors and old-time production man; Jacques Vinmont, President of the company and banker and financier; and Clarence Olmsted, one-time Texas Corporation engineer and, since 1924, California Petroleum vice-president in charge of refining and transportation.



Torrey H. Webb

Of the three men present at that first discussion of a merger that would carry their company into the world-wide marketing of oil, Tom O'Donnell seemed best qualified to speak. He had taken a leading part in the organization of the American Petroleum Company, first California Petroleum predecessor, in 1908; he had seen it sprout when one of its subsidiary companies, American Oilfields, had struck it rich in the Midway Gusher district. He had watched production level off to about 3,000,000 barrels of oil a year and then climb in spectacular fashion to a total production of 17,000,000 barrels of crude in 1923, followed by increased facilities for refining and transportation. Finally, in 1924 and 1925, he had witnessed the series of moves and mergers that placed his company in marketing competition with the oil giants of the West.

Thomas A. O'Donnell

All this had been O'Donnell's responsibility. He had had able assistance from Tom Crumpton, "Booky" Fuqua, "Patsy" O'Neil, Harry Maddren, Charlie Chandler and W. D. Stewart. But as the one individual who had continuously served as a top-flight executive during the two decades of the company's existence, he knew the struggles, the accomplishments and the future prospects of California Petroleum. And as O'Donnell looked about him in 1928, he saw great companies joining hands to expand economically into the markets of the world. He thought of the men whom he had raised in the California Petroleum Corporation; to him their futures were his responsibility. He thought of the hundreds of California Petroleum stockholders who had invested money in his company and who looked to him for continued leadership and future security.

O'Donnell spoke of these things to his fellow directors. He told them that, more than anything else, he was seeking security for his company's employees and stockholders. And he told them that, in his opinion, a merger with solid, substantial Texas Corporation was the surest and safest way for the products of their wells and refineries to move into world markets. Olmsted and Vinmont agreed; they were as conversant as he with the dangers that lay in the single-handed kind of expansion that appeared to be their company's next logical step in growth.

Jacques Vinmont and Clarence Olmsted were entrusted with the responsibility of carrying the consolidation plans to completion. Together they traveled east and in June, 1928, after an extremely careful inspection of Calpet's books and properties, the Texas Corporation announced the

Kern drilling COMPANY CHOOSES A WILSON PORTABLE DRILLING RIG

A well contractor knows drilling equipment from A to Z. **He has to,** for his very existence hinges upon his ability to deliver peak drilling efficiency under **all** conditions!

That's why, when Kern Drilling Company contracted with Superior Oil Company to push down a wildcat far back in the hills north of Coalinga, a Wilson Portable Drilling Rig was the logical choice. They knew it would provide maximum SPEED . . . ECONOMY . . . and all-around DEPENDABILITY!

Wilson's exclusive chain drive transmission transmits 35% more power to the point of action, assuring highest efficiency at lowest cost. (Kern, under heavy drilling, using a 400 H. P. set-up, has averaged less than 6 bbls. of fuel oil per day, and comparative economy is obtainable with Natural Gas or Butane.)

Wilson's patented clutch arrangement makes it unnecessary to reverse gears when disengaging clutches—a decided speed feature,—and the absolute dependability of Wilson rigs has been proved by more than 200 Wilson Portables in daily use **all over the world.**

Regardless of where your wells are located . . . or to what depths you are drilling (3500 to 10,000 feet) . . . there is a Wilson Portable Rig that will do your drilling job more efficiently for less money. Write for full details.

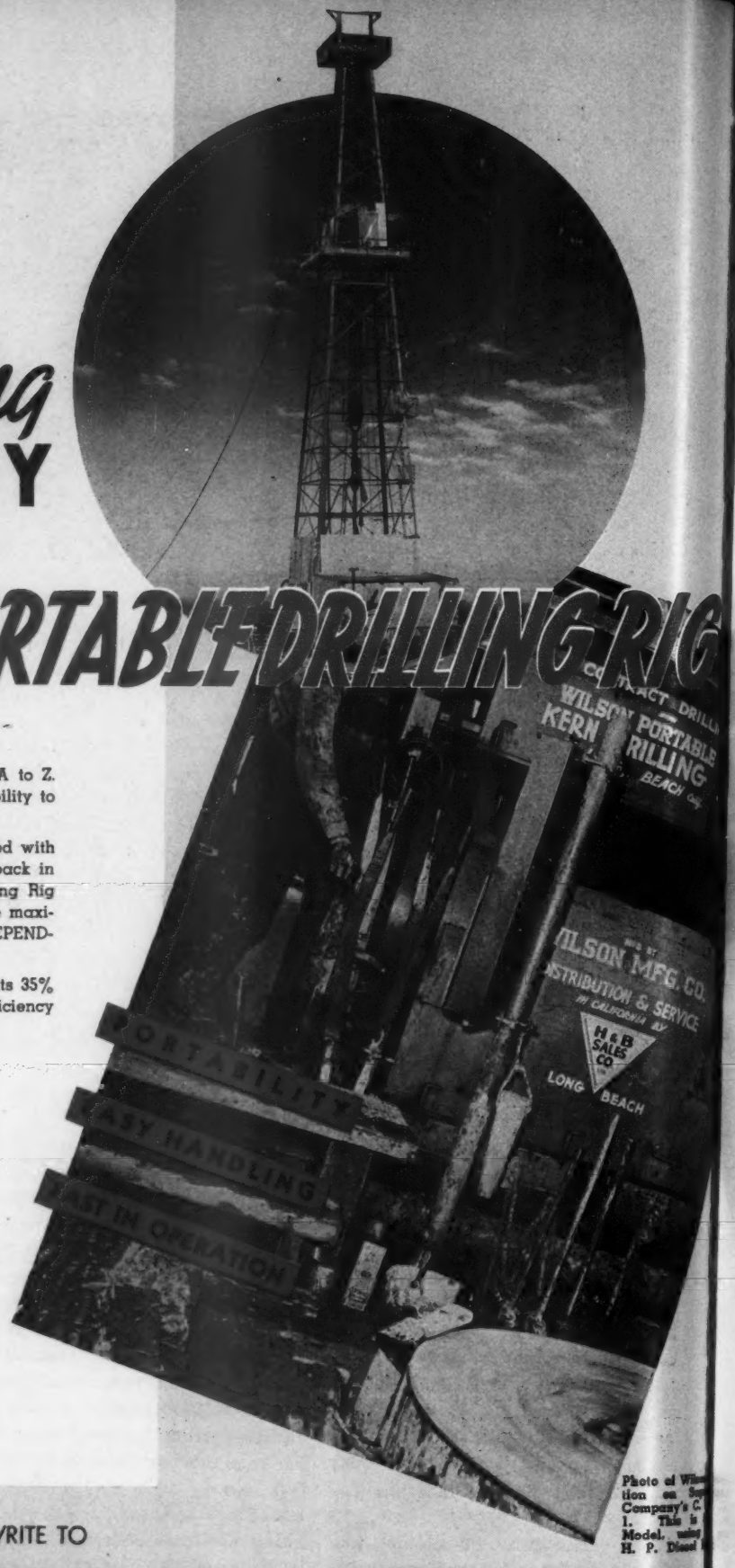


Photo of Wilson on Superior Company's C. I. This is Model, using H. P. Diesel

H & B SALES CO. LTD.

FOR COMPLETE INFORMATION WRITE TO

H. and B. SALES CO., LTD.

2875 CHERRY AVENUE · LONG BEACH, CALIFORNIA · PHONE 41659

purchase of 20-year-old California Petroleum Corporation, subject to ratification by the stockholders of both companies.

Benefit Employees and Stockholders

Olmsted and Vinmont had made a good deal for their employees and stockholders. They had given them the security of association with a world-girdling corporation that had proven its ability to market petroleum products around the globe. Executives of the Texas Corporation had likewise served their stockholders well. Through a single move they had placed their company in a strong position in the rich and competitive Western oil market; they had gained a national distribution for their famed Texaco products; and they had materially strengthened their marketing position in the important oil centers around the Pacific.

The day the merger was announced little knots of California Petroleum employees gathered in the fields, at the refineries and in the company's offices and bulk plants. Most of them felt sure that O'Donnell, Vinmont and Olmsted had made every effort to protect their jobs but they couldn't feel secure until the details of the merger were brought to them first hand by the men who had engineered it. Meanwhile, Vinmont and Olmsted were hurrying West to meet with O'Donnell and make public the expansion plans that were contemplated as soon as the stockholders of California Petroleum and Texas Corporation ratified the consolidation.

As president of the California Petroleum Corporation, Jacques Vinmont gave his directors the details of the merger as it had finally been drawn. That was nearly 10 years ago, but members of the last active California Petroleum Board remember it well. In his customary formal manner, Vinmont addressed his fellow directors in this vein:

L. R. Holmes

Merger Highlights

"Gentlemen, I presume you know why we are assembled. It is to lay before you the essential details of the proposed merger between our company and the Texas Corporation and to ask that you ratify the consolidation which Mr. O'Donnell, Mr. Olmsted and I have been negotiating for the past few months. The completion of the transaction now depends merely on our agreement to exchange two shares of Calpet common for one share of Texas common.

"I have been in the banking business practically all my life. I have been trained to judge the comparative worths of corporations with a view to mergers and I believe I have a complete knowledge of the value of our company's properties. We have gone to considerable pains to examine into the value of the Texas Corporation's properties and I can confidently say that an exchange of common stock on a two for one basis is eminently fair.

"I want you gentlemen and our stockholders to know that in working out the details of the proposed merger we have attempted to serve your best interests at all times. We believe that such a consolidation of interests as we and the Texas Corporation propose will benefit the stockholders of both corporations. It has been agreed that the employees of this company will be retained and that their service benefits will continue under any new management that might follow. Therefore, I am asking you who are close to the oil industry and the part that both corporations play in it to recommend ratification of the merger plans to the stockholders of your company."

Consolidation Completed

The California Petroleum directors had confidence in Vinmont. He had served as a director of the company for more than 10 years and as executive committee chairman and, subsequently, as president, for half a decade. Before that meeting was adjourned the directors had placed their stamp of approval upon the merger and had passed a resolution urging adoption by the stockholders with a minimum of delay. The details of the merger plans were immediately published and within a few weeks the California Petroleum Corporation became an autonomous subsidiary of the great Texas Corporation and became known as The Texas Company (California).

While the stockholders of the company were studying the merger details Tom O'Donnell, in characteristic fashion, talked directly to the men he had grown up with in the oil business. To groups of old friends he met in the fields, O'Donnell said something like this:

"You boys haven't anything to worry about; you've got your jobs and your record of service continues just as though there were to be no change in corporate ownership. Vinmont, Olmsted and I talked that over mighty carefully before the boys left for New York to go over the deal with the Texas people. And to give you an idea of the kind of folks your new financial bosses are they agreed exactly with our ideas. Clarence Olmsted told me they had had that in mind all along; in fact,

he said it was their idea that this company should run along just as it always has. So you don't need to worry about getting in a dozen new bosses with fancy ideas about how things should be handled here in the field.

International

"We men who got started in the oil business in the old days learned one thing for sure. You have to have good men to make an oil company go forward. Well, the Texas people know that, too. They started out as a producing company when some of us were working together on rigs at Coalinga. That was in 1902, six years before our original company, American Petroleum, was formed. The only real difference between them and us is that they started down around Port Arthur, Texas, and we started out here in California. Our ideas haven't changed much and neither have theirs; we've seen methods change but we're still sure that as long as the oil business keeps going men will be the most important thing in it. That's why I have been for this merger; I liked the way this Texas outfit operated and I liked what I knew of their production and marketing activities. It looks like a natural move to me; we have something they want in this western market and they have something we want by way of world marketing and the security that big corporations can give their people.

"Under the new arrangement I know your jobs are secure and your futures are safe. I'd like to have you tell the younger men in the field how I feel about things. I think if you do they'll be a lot happier and sure of themselves. And you can tell them for Tom O'Donnell that working for the Texas Corporation is going to be a real pleasure."

Autonomy

Almost immediately after the merger was ratified by the stockholders of both corporations a new man was

R. T. Herndon

placed in charge of production. He was no eastern big-wig but a man that every old-timer with Calpet had known. His name was Clarence Olmsted and for a number of years past he had been vice-president of their company, in charge of refining and transportation. He had started in the oil business in 1915 as a surveyor in the El Segundo district of California at a salary of $3 a day. That first experience had given him a deep-rooted interest in production, and, although he was later to become a refining expert, he continued to remain as close to production as his job allowed. And like his friend O'Donnell, Olmsted believed in men and in the part they play in the success of an oil enterprise.

In the late summer of 1928 Harry Maddren, Olmsted's production superintendent and an old-timer with California Petroleum, began the deep drilling at Santa Fe Springs that resulted in a new boom for that famous field. By the end of the year, production from The Texas Company of California's 621 wells was averaging 43,000 barrels of crude a day. Over-production had caused the leaders in the oil industry to curtail drilling and producing activities sharply, and The Texas Company co-operated with the other majors. In 1928, in an effort to stabilize prices and prevent waste, the company shut in 119 of its wells in the various fields in the state.

Before the end of that first summer Western motorists were aware of the arrival of The Texas Company. The change over from Calpet and Ventura to Texaco service stations was made with considerable fanfare. Newspapers, radio and other forms of advertising announced the coming of the Texaco dealer and by the close of the year Texas Company service stations were as much a part of the western scene as were the stations of the other major companies.

Production Soars

On January 1, 1929, Clarence Olmsted was named executive vice-president and general manager of The Texas Company (California) and employees knew finally that the parent company in the east intended that their autonomous subsidiary retain its own character and independence. That year saw a continued progress for the company; production reached an all-time high of 19,668,000 barrels of oil in spite of 228 shut-in wells. New additions were made to the refinery and throughput averaged nearly 35,000 barrels of crude a day. New pipe lines were laid and storage capacity was increased to 12 million barrels. The company's net earnings for the year were $5,718,734, despite low crude prices and the disturbing gasoline wars that seemed always to follow new field or deep sand discoveries.

By the close of 1930 Texas Company's total gasoline sales in the western territory were ranking well up with the other leading companies in the industry. During the year more than 107,000,000 gallons of gasoline flowed from Texaco pumps into the gas tanks of motorists in California, Oregon, Washington, Arizona, Idaho, Montana and Utah. The company owned bulk stations in most of the cities and larger towns in their territory and along the highways of the west

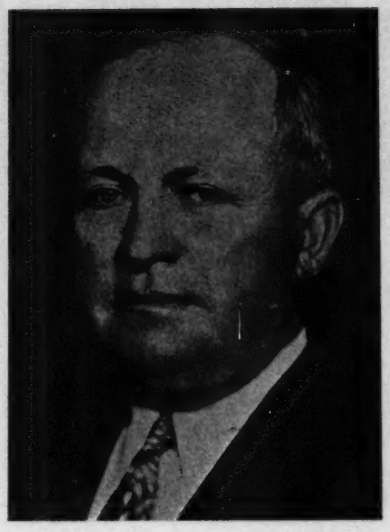
there were 793 green, white and red service stations selling Texaco products exclusively. The marketing gap that had long worried the parent company was being rapidly closed and the Texas Corporation could proudly point to its distribution system as the most complete and widespread in the United States.

Curtailment

In common with all other oil companies, The Texas Company of California began to feel the first rumblings of depression in 1931. With sales of all commodities declining, the company shut in 336 of its 769 wells and dropped its production for the year to 8,910,000 barrels of crude, the lowest point in nine years. Gross earnings fell off to $17,522,000 and net earnings for the year were written in red ink to the tune of $712,048. The following year was even more disheartening and gross earnings fell below $15,000,000 and the company operated at a $2,360,000 loss for 1932.

All that was discouraging but there was a bright side to the picture. The primary object of the Texas Corporation's move westward in 1928 had been to increase its sales, enlarge its service to motorists and expand its marketing facilities to include all of the country. And, even in the depths of the depression, that was being done. In 1933 Texas Company of California sold approximately 120,000,000 gallons of gasoline to motorists in its eight-state territory and received 5.5% of the gasoline dollar spent in its Pacific Coast area of California, Oregon, Washington, Arizona and Nevada. By then Texaco products were being sold exclusively in 1473 service stations and the Texaco Fire Chief had become a familiar character to the millions of motorists who sped over the highways and byways of the Pacific West.

In 1933 The Texas Company pulled itself out of the mire of depression and showed net earnings of $870,268 for the year. Although production



Charles C. Stanley

fell below the eight million-barrel mark sales held steady despite increasingly depressed conditions. Again in 1934 the company showed a profit of more than half a million dollars and that year it registered a remarkable sales gain when motor gasoline sales reached a new high with a total of 140,000,000 gallons.

Olmsted President

On January 15, 1934, the Texas Corporation gave further indication of its satisfaction with the operation of its aggressive and autonomous Western subsidiary when Clarence Olmsted was named president of The Texas Company (California).

As the executives of the parent corporation looked over the record at the end of 1934 they must have been pleased to note that, in the face of the worst depression in history, a series of staggering price wars and decreased buying power, the California company had done remarkably well. In five years a distribution and service station system had been built that ranked well up with those of the industry's leaders. Gasoline sales had been increased from 107,000,000 gallons for 1930 to 140,000,000 gallons for 1934. And Texaco products were accepted on an equal footing with the products of the other major oil companies by the discriminating motoring public of the Pacific West.

The ground work that had been laid really began to bear fruit in the years that immediately followed the oil industry's emergence from the black days of depression. In 1936 the sale of Texaco gasoline again rose sharply and by the end of 1937 gasoline sales were approximately double those of seven years before. In 1936 the company showed a profit of more than two million dollars and in the first six months of 1937 net earnings passed the $3,000,000 mark and more than wiped out the red ink that had been written in the ledger during the entire depression period.

In the space of a few short years The Texas Company of California has definitely arrived, not alone in the West but in the countries that border the Pacific. And it has come to be recognized as one of the leaders in the California oil industry. And with The Texas Company today, just as with the California Petroleum Corporation of yesterday, the credit for that progress and recognition goes not to luck but to men. The broad, human employee policies that O'Donnell adopted in his company years ago have been continued by the Texas Corporation, its autonomous subsidiary in California and its president, Clarence Olmsted. And as O'Donnell predicted in 1928, the company has retained the flavor and character of its predecessor and the men who brought it through the perilous days of its beginning and its growth to maturity.

Men, Not Luck

We should like to tell the individual stories of the hundreds of men who have helped to bring The Texas Company to a position of leadership during the decade just closing. But our space is limited and we shall have to confine ourselves to the active California oil men who sit on the board of the company and direct the operations of the thoroughly western Texas Company of California.

Clarence Olmsted

Clarence Olmsted — President and General Manager, born at Santa Paula, California, in 1890. In his first job he earned $3 a day as surveyor at El Segundo, then he was engineer in eastern oil fields. After war service he joined The Texas Corporation as engineer and served in the refining department until 1923. Joined California Petroleum in fall of '23 as manager of engineering, natural gasoline, pipe line and refining departments. Elected vice president in 1924 and director in 1925. Named vice-president in charge of refining for The Texas Company (California) in June, 1928, and vice-president in charge of production in January, 1929. Elected president and general manager of The Texas Company in January, 1934.

Torrey H. Webb

Torrey H. Webb—Assistant to President and General Manager, born in California in 1892. Upon graduation with a Mining Engineering degree in 1917 joined the U. S. Aviation Corps. He has the distinction of being the first air mail pilot in the United States. Entered the oil business in Texas in March, 1919, and joined Ventura Consolidated Oilfields in California, as statistician, in 1922. When Ventura was purchased by Calpet in 1925, he joined that company as engineer in the transportation and refining departments. He became manager of the land and leasing department in 1929 and in 1931 he was made assistant to the vice president and in 1934 assistant to the president and general manager, and a director of The Texas Company (California).

L. R. Holmes

L. R. Holmes—Vice President and Manager of Refining, born in Pennsylvania in 1882 and worked during school vacations at the Standard Oil Olean Refinery. Joined The Texas Corporation at the Port Arthur Works in 1903 and has served in the refinery department of that company ever since. In 1923 was appointed assistant manager of the corporation's refining department and in 1928 joined The Texas Company (California) as vice president and manager of refining department and pipe lines. Elected a director in 1933.

W. D. Stewart

R. T. Herndon

R. T. Herndon—Vice President and Manager of Sales, born in Houston, Texas, in 1895 and entered service of The Texas Corporation as Brownsville, Texas, agent in 1915. In 1923 he was made superintendent at El Paso and in 1924, superintendent at Denver, Colorado. A year later became district manager at Denver and shortly after, superintendent of service stations at New York. These forward steps were followed by district and assistant managerships of various divisions and territories until he was appointed vice president in charge of sales for The Texas Company (California) in 1929, and shortly afterwards he became a director.

Charles C. Stanley

Charles C. Stanley—General Counsel, born in 1877, practiced law for five years at Goldfield, Nevada, and joined California Petroleum Corporation, after long association as legal counsel, in 1924. He is in charge of the legal department, and all land and leasing department activities, for The Texas Company (California). He was elected a director of the company in 1927.

W. D. Stewart

W. D. Stewart—born in 1870, earned first salary as a gas company employee at $4 per week. Became a bookkeeper and credit man and moved to California in 1909. Joined the Southern Pacific Railroad and gained first knowledge of oil through auditing books of the Associated Oil Company and subsidiaries. He joined the California Petroleum Corporation in 1911 and rose steadily until he was elected a vice president and director in 1916, treasurer in 1926. He resigned in 1928 as treasurer, and was appointed assistant treasurer and director of The Texas Company (California).

The story of the California Petroleum Corporation and The Texas Company of California that succeeded has been a tale of men and pioneering. With O'Donnell and the men who surrounded him it was largely concerned with development and production and final emergence into refining and marketing. With The Texas Company of California our story has largely concerned itself with the remarkable strides that stalwart leader has made in the marketing of the refined products of oil under the famed Texaco brand. The record of that achievement, through good years and bad, is written along the highways of the West.

But it is freely predicted that the key policy for 1938 will once again be production exploration in the great oil fields of the Pacific Slope. And woven through that future design will certainly be the thread that characterized the early explorations of Tom O'Donnell—that men, not luck, find oil.

WELLS *HAVE* BEEN DRILLED WITH POOR MUDS

BUT OLD-FASHIONED DRILLING METHODS CANNOT COMPETE WITH MODERN TECHNIQUE

Old-fashioned mud control practices are as out of date as ancient drilling rigs and tools. Present-day operators find that many commonly encountered drilling difficulties can be eliminated or overcome by the use of BAROID Products.

AQUAGEL, by adding gel-forming colloidal material to muds, does much to eliminate the danger of stuck drill pipe and tools. It helps to keep water from entering the formation being drilled, thereby preventing sloughing of the hole.

BAROID, when used as a weighting material in drilling fluid, helps control oil, gas, water pressures and holds caving formations in place. Pumpable muds weighing as much as 19.4 pounds per gallon (145 pounds per cubic foot) have been prepared with BAROID.

STABILITE reduces the viscosities of thick drilling muds, increases their wall-building properties and frees entrained gas. It reduces the danger of gas-cutting and consequent blow-outs.

BAROCO is practically unaffected by salt water, brine or other chemicals encountered in drilling and quickly builds a thin, impermeable wall which checks water from entering formations. One ton of BAROCO will make 40 barrels of excellent drilling mud.

FIBROTEX helps restore lost circulation in gravelly, fractured or creviced formations. FIBROTEX muds seal faster and deposit a thinner filter cake. It is non-abrasive and non-corrosive.

A BAROID Service Engineer can show you that the safest, fastest and most economical drilling is accomplished by using BAROID Products and Service. Ask him for the facts!

Stocks Carried And Service Engineers Available in All Active Oil Fields

BAROID SALES DEPARTMENT

NATIONAL PIGMENTS & CHEMICAL DIVISION OF
NATIONAL LEAD COMPANY
BAROID SALES OFFICES • LOS ANGELES • TULSA • HOUSTON

Electrical Oil Well Surveying Marks High Point In Petroleum Engineering Progress

The methods of surveying drill hole formations and conditions by electrical means have become so widely accepted by the soundest operators in the oil business that only lack of understanding or unreasoning obstinacy will permit any driller to ignore this outstanding development in petroleum engineering. With his specialized electrical equipment the expert can with speed and precision determine the depth, thickness, character, saturation, porosity and permeability of all formations encountered by the drill bit. He makes the task of subsurface correlation between wells a simple matter. With his instruments he tells the driller the exact point of water intrusion, where gas strata are causing unfavorable gas-oil ratios, the presence of any faults, unconformities, grabens, tilted blocks, and other changes. The electrical expert can find the casing depth quickly and locate the top of the cement accurately. All of this he does either in the open hole or through casing, and with such speed and economy that his services are easily within the reach of the smallest operator.

Electrical Reception Conditioners

Those who operate radio receiving sets know that the near presence of large steel structures will weaken or kill their reception, and everyone knows that some materials will conduct electricity while others will not. This selective behavior of electrical waves or charges is the heart of the methods of electrical determination of sub-surface conditions. The principles are simple enough, but the work of devising means of applying them practically in oil well surveying has been a ten years' conquest of apparently insurmountable obstacles. The experts have won out and skepticism has faded entirely.

Complete Continuous Well Records

As explained by those closely associated with the development of electrical oil well surveying or logging, the instruments give easily interpreted graphs which are the complete and continuous records of the manner in which the varying electrical properties of the formations surrounding the drill hole influence the pressure drop (potential drop) and current distribution in an electrical field produced in the formations by a moving electrode, or electrodes (actually tiny sending and receiving radio sets) lowered into the well.

Electrical Response Variations

There are several different methods of obtaining the results sought in electrical logging of oil wells; however, the following outline covers the essential points more or less common to all: It has long been known that dry rock, sand or shale are non-conductors of electricity. The passage of an electric current through

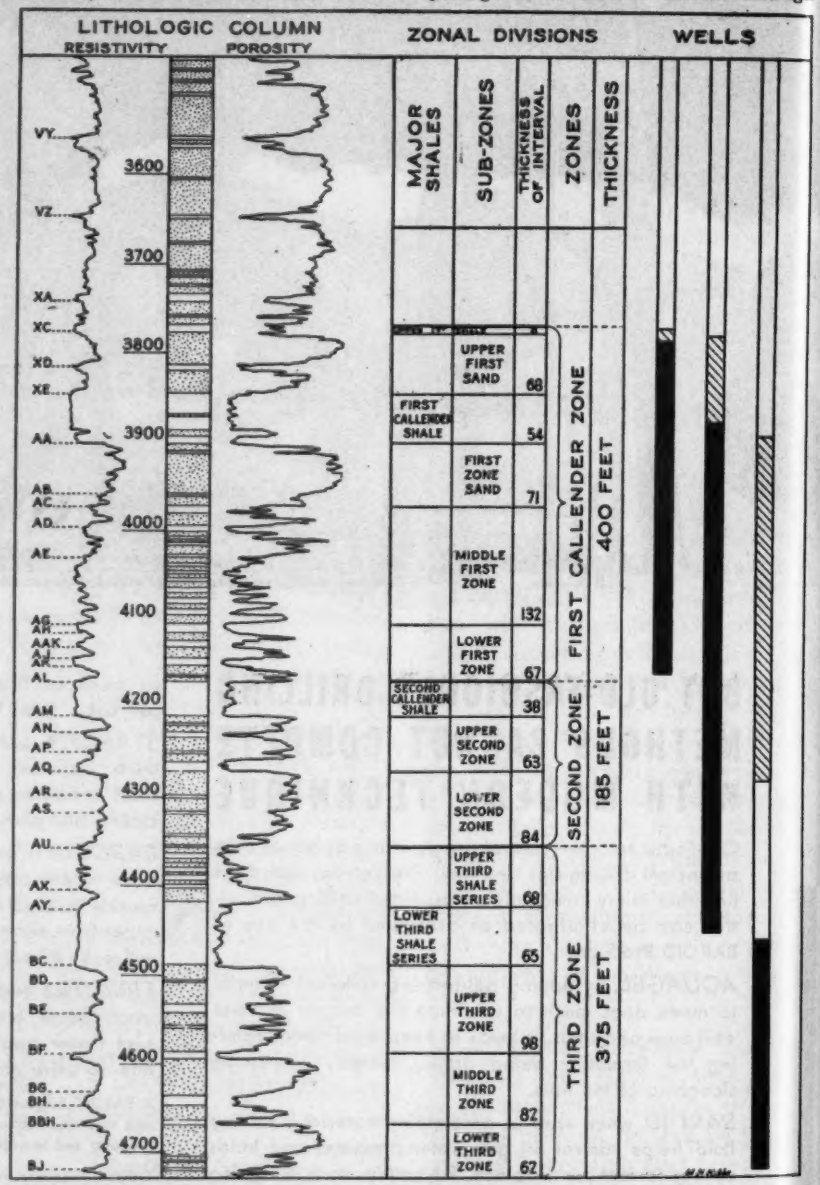


Chart shows a section of composite tabulation of "electrical corings" taken in three Dominguez oil field wells. From left to right: letter index of formations; resistivity curve, high resistivity to the left, low to the right; composite bar showing sands (dotted portions) and shale as indicated by resistivity and porosity readings; porosity curve, high porosity to the right, low to the left; zonal divisions data and wells from which "electrical corings" were taken.

an earth mass is possible mainly because of the water contained in the pore spaces of the formation and the dissolved salts or electrolytes. The electrical circuit is made up of a ground, or earth connection (made either by driving a metallic rod into the ground and connecting it to one side of the recording devices in the circuit, or by using the casing itself as the metallic rod), hooked up with an electrical source, or battery, and with the electrode or electrodes which are lowered into the well by means of an insulated cable.

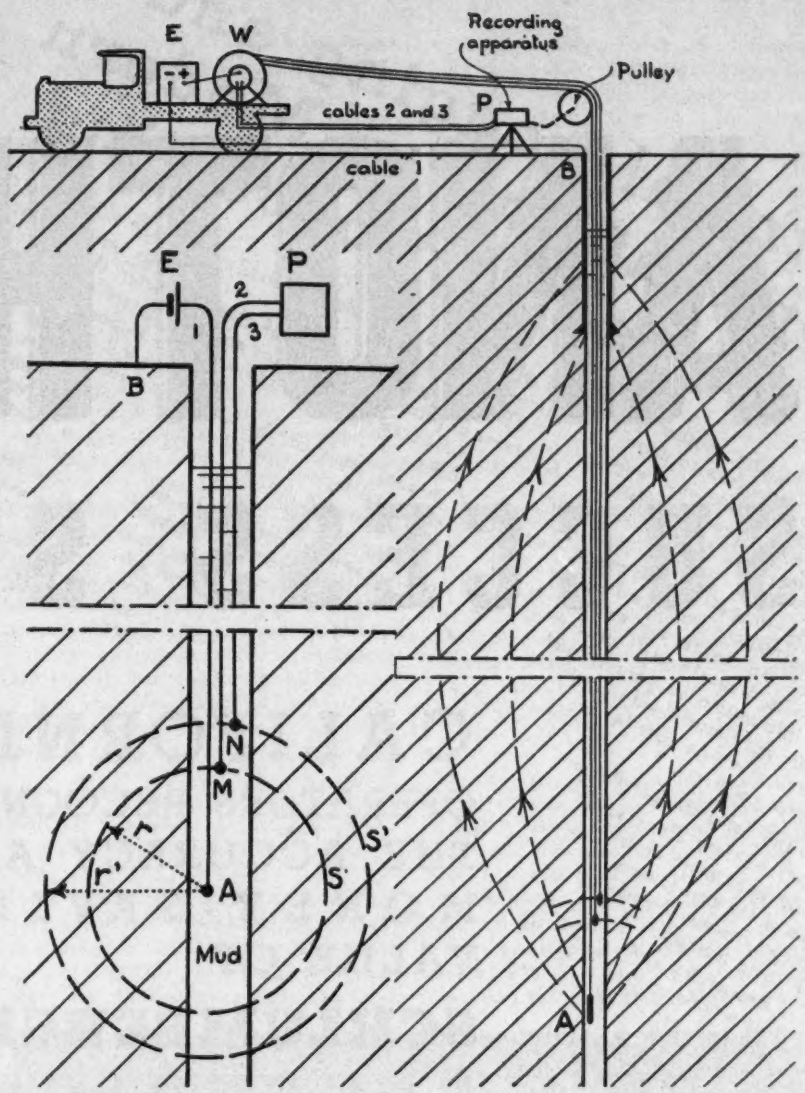
Definite Formation Characteristics

For the purposes of this article it is immaterial whether the records made by the surface equipment are based on "resistivity" or "conductivity", whether the readings are in Ohms centimeters, or millivolts. The terms "pressure" and "resistance" are used here without intent to identify or describe one particular system of electrical well surveying. In describing the making of the survey, therefore, it may be said that the measuring device, or electrodes, is lowered into the hole on a cable which contains insulated conductors connected in the electrical circuit described above. A current of constant intensity is sent through the ground, and the measuring electrodes are brought to the potential (electrical pressure) of the adjacent formation by immersion in the mud filling the hole. The difference in electrical pressures on the electrodes and on the face of the adjacent formation is recorded. This difference in potential when recorded constitutes a continuous record of the resistivity of all the strata encountered in that part of the hole under examination.

The electrical "porosity" of a formation is due to the electrolyte or electricity carrying fluid in the pores of the formation. The most intense "formation currents", therefore, are found where the most pervious electrolyte-filled layers lie. The recording device connected in the electrical circuit closed by the "ground" mud fluid, measuring device suspended in the hole, and the electrical source, makes two records simultaneously, one graph for the resistivity of the formation, and one graph for the conductivity or filtration potential. The two curves are drawn or photographed side by side and are synchronized exactly.

Graphs Tell Complete Story

One of these curves, let it be called the permeability curve, delineates the physical nature of the formation. It serves to distinguish sand, shales, conglomerates, shells and fracture zones, and is based on a "shallow electrical penetration" into the formation. It is not used generally to infer the nature of the fluid which may normally be present. Higher values correspond to more open, coarser formations. Shales and tight formations give low values. This curve is usually employed in correlations and in determining subsurface discontinuities.



Device employed for taking electrical measurements is shown above. It comprises three insulated cables 1, 2 and 3, which are lowered into the well. Three electrodes A, M and N are attached to the cables, which dip into the water or mud filling the hole. Distances AM (r) and AN (r') are from 10 to 20 times the diameter of the hole. Electrode A is used to send the current into the ground, and electrodes M and N to measure the difference of potential caused between these two points by passage of the current through the ground. To cause the current to flow into the ground, electrode A is connected with cable 1 to one pole of battery E, the other pole being grounded to any given earth contact B—frequently the casing. To measure the difference of potential between M and N, these electrodes are connected by cables 2 and 3 to terminals of the potentiometer P. Knowing the distances r and r', the intensity of the current passed through the ground, and the difference of potential voltage between M and N (as measured by the potentiometer), the average resistivity of the ground in the region of AMN can be calculated. At right is a cross section of method of setting up instruments. E, battery; W, winch for insulated cables; P, potentionmeter; B, ground for Cable 1; A, one of the three electrodes.

Significance of Curves

The other curve may be called the saturation curve. It is a function of conductivity or filtration potential, and measures electrical values of the formation at a greater distance where the fluids in the formation are unaltered by conditions set up in the drilling operation. High values in the saturation curve

ANOTHER SUCCESS STORY

CALIFORNIA OPERATORS RECOGNIZE THE ACCURACY AND MONEY-SAVING VALUE OF...

SCHLUMBERGER ELECTRICAL LOGGING SERVICE

NINE UNITS IN CALIFORNIA TO SERVE YOU

SCHLUMBERGER

WELL SURVEYING CORP.

MAIN CALIFORNIA OFFICE: 517 Jergins Trust Bldg., Long Beach

VENTURA • BAKERSFIELD • COALINGA

SANTA MARIA

are recorded for oil sands, high pressure gas sands, fresh water sands, conglomerates and extremely dense shales. Low values are given for salt water sands, bentonite, shales or metallic bodies. High dielectric values (insulating quality) are to be expected in formations in which the contained fluid is a poor conductor of electricity, or in which there is little or no fluid due to density.

Detect All Pay Sands

By comparing the two curves, that is, the resistivity and conductivity of the sand or other porous media, it is not difficult to determine whether the formation contains oil, gas or salt water, or whether it is dry or impermeable. The danger of passing up pay sands in a well is practically nil. In numerous cases old wells have been surveyed and a number of unsuspected oil sands discovered and exploited at considerable profit. By studying the curves a more accurate evaluation of the sand sections can be obtained, with the log showing layers of different character, shaley sections, impervious sands, etc., and thus giving the amount of net sand section for calculation of reserves.

Water level in an oil producing section can be determined by studying the resistivity and conductivity curves. This is often done with a view of cementing off the bottom part in order to hold back the water. The well is first killed with fresh water or drilling mud, the tubing and liner are pulled, and the survey is made to locate a shale break in the sand or sands immediately above the water as soon as possible after the well has been killed. The well is then plugged back to the sand-shale break and recompleted. Wells may also be worked over to cut down high gas-oil ratios. The survey determines the location of the gas and the best point at which casing should be set in order to shut it off.

Measuring Dip

Direction of the dip of the formations can also be determined electrically. The principle of this determination, it is pointed out, is based on the anistropy of the sedimentary formation. Because of this anistropy the electrical conductivity of stratified rocks is maximum in the direction of the stratification, and minimum perpendicularly. The better bedded the formations, the more anistropic they are.

Logging Behind Casing

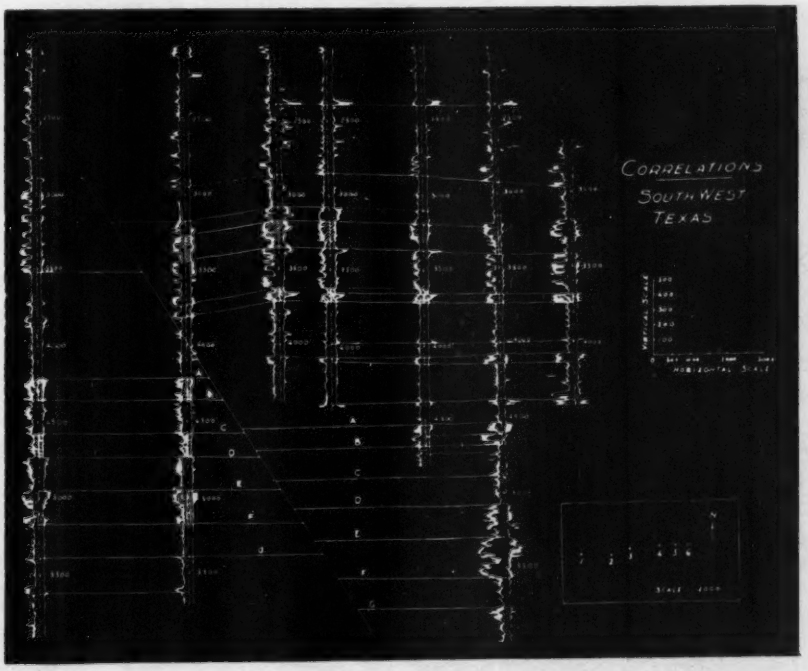
Logging of formations behind casing is a specialty of at least one electrical surveyor. Experience has shown this method to be highly accurate and of high value to oil operators. The method is described by the chief petroleum engineer of a leading oil company as follows: The method is based on the electromotive series of metals. Two circuits are established and nearly balanced against one another; the difference between the two making a record that is interpreted.

Two Circuits

Each of these circuits is so regulated with resistance that it has about the same strength as the other, their variations being affected by the electrical effect of the fluid in the formation, which serves as an electrolyte. The first circuit includes a zinc rod driven into the ground about 150 ft. from the well. The current flows from the zinc rod through the earth to the casing of the well and is returned to the zinc rod from the casing through a wire in which the recording instrument and the resistance are placed. The second circuit includes a zinc plate suspended on an insulated wire line inside the casing. The fluid in the casing may be oil-field water, fresh water, salt water or mud, but of the same consistency. This creates a constant electrolytic action between the zinc plate and the casing. The current flows from the zinc to the casing and from the casing through the earth to a copper ground located about 100 ft. from the well. It returns from the copper ground through the recording instrument and the resistance down the cable to the zinc plate. These two currents flow in opposite directions. The only purpose of introducing the resistance in one of the circuits is to limit the swing of the needle of the recording device to the width of the paper on which the record is made. As the suspended zinc plate is raised or lowered in the well, and comes opposite the different beds outside the casing containing fluids of different strength, currents of different magnitude are set up. Thus the record is made. Where the record swings widely to the left, it indicates shale and where it swings widely to the right, it indicates sand.

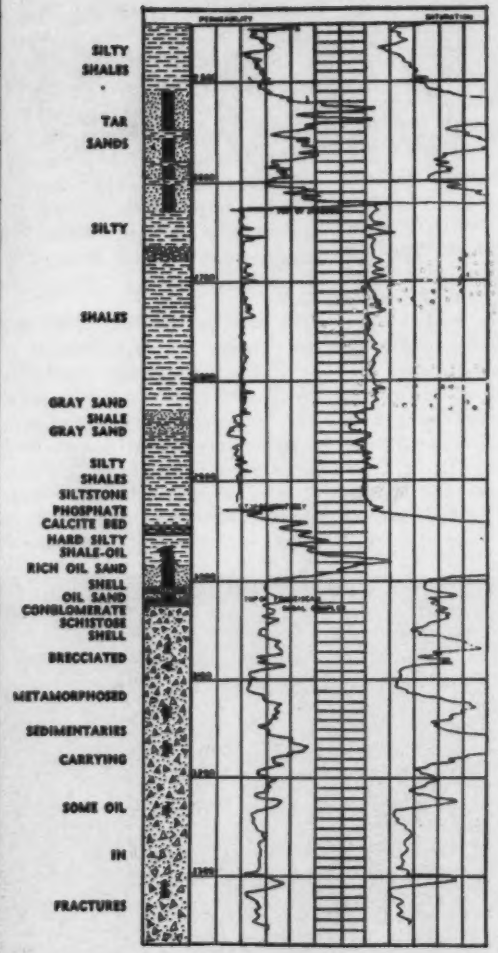
The following prices for the services rendered by an electrical well surveying company indicates the economy of the methods. For the resistivity and porosity survey there is a service charge of $100 for the first run on any well, and $50 for the second run, with no charge for subsequent runs. The depth charge, based on total depth reached, is 3 cents a foot; the survey charge, based on length surveyed, is 5 cents a foot.

Determination of the casing depth and its position in the formation is priced at $125. Dip surveys require a highly specilaized crew and two to three hours' time for each level investigated. The first dip survey costs are divided as follows: set up charge, $300; depth charge, 5 cents per foot below 5000 feet; survey charge, $200 for each level surveyed. There is a rebate of $100 if the company



Correlation is easily obtained by comparing electrical records of a field.

ENGINEER



. . . . . A MILLION MISSED BY AN INCH

Dry holes—poor producers—abandoned leases—oil missed only by inches. This chapter in petroleum history should never be repeated! ❡ ***Electric Logging has brought a new era to the industry;*** an era in which chances of failure are reduced to a minimum. Knowing replaces guessing. Through Electric Logging the industry moves forward with greater confidence and greater profit. ❡ ***Geoanalyzer has brought a new era to Electric Logging;*** an era in which service and accuracy have hit a new high. The part Geoanalyzer plays in the science of Electric Logging includes major improvements in methods, developments in equipment, increased accuracy, and not least - quicker, better service. Today, Geoanalyzer's swift, mobile laboratories are available anywhere, anytime in California on an hour's notice.

INVESTIGATE THE SERVICE OFFERED BY ELECTRIC LOGGING. INVESTIGATE THE SERVICE OFFERED BY GEOANALYZER.

ELECTRODE ASSEMBLY

GEOANALYZER CORPORATION

2555 AMERICAN AVENUE
LONG BEACH, CALIFORNIA
PHONE: 420-96

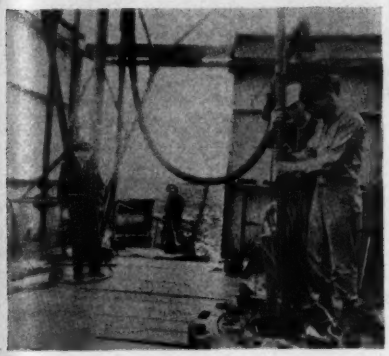
Geoanalyzer CORPORATION

518 E. NINETEENTH STREET
BAKERSFIELD, CALIFORNIA
PHONE: 1420

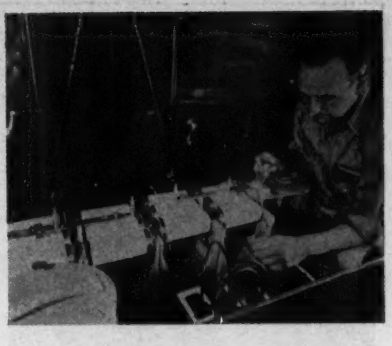
has made electrical logs of the levels examined. Mileage charges must be added to all of these prices.

Other electrical developments which are certain to figure prominently in modernized drilling and well completion methods, are electrical thermometer devices which are meeting success in locating gas-oil bearing strata in open hole; locating the water bearing formations discharging fluid into a well; locating the top of the cement behind the casing, and in logging the different formations behind the casing.

The selenium cell, which converts light values into electrical impulses of varying strength, has lately been introduced as the eye which may be sent down into the well to locate the exact point of water intrusion. The well is conditioned with mud of a certain opacity, and when the selenium indicator is lowered into the well it records the exact point at which the fluid loses opacity (transmits more light), the point at which water is entering the hole.



Going in for a determination.



The survey trucks are complete laboratories on wheels.

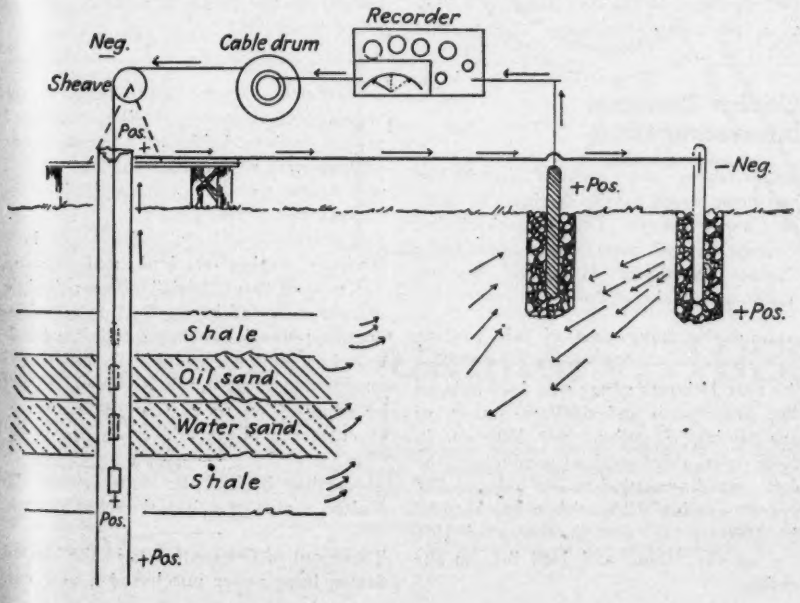
W. A. Newhoff Made Asst. Sales Director

W. A. Newhoff has just been appointed to the important post of assistant director of sales for Union Oil Co. of California.

Mr. Newhoff, formerly manager of refined oil sales, is one of the company's younger executives, being just forty-four years of age. He first began his career with Union Oil Co. 17 years ago at San Francisco, and was assistant district manager at Los Angeles for a short time during the year 1929. In 1933 he was appointed central division manager, with headquarters at San Francisco, and remained in that capacity until last July when he was transferred to Los Angeles as manager of refined oil sales.

One dollar out of every six paid in automotive taxes is diverted to non-highway uses.

The two circuits established to record formation characteristics through casing.



HOW TO WIN DOLLARS AND INFLUENCE PRODUCTION

Oil wells like humans respond to proper treatment. When production is off because of junk, plugged perforations, or bad sand conditions, it's a cinch for The Cavins Hydraulic Suction Bailer and Fishing Tool to bring them back to par. There's no gambling with The Cavins, it's down-right dependability proved through many years, and thousands of tough jobs, makes it a safe bet for bailing, fishing and washing perforations. Where others failed The Cavins made good, because it's scientifically correct in principle and construction.

You can depend on The Cavins. It's a necessary tool in every rig.

Send for Bulletin No. 38, giving detailed information.

The Cavins Automatic Hydraulic Suction Bailer and Fishing Tool.

CAVINS

THE CAVINS CO.

2853-73 Cherry Avenue,
Long Beach, Calif.

Cable Address: "Cavins, Long Beach"
Foreign Representative: R. J. Eiche

BRANCHES:

CALIFORNIA: Bakersfield, Taft, Ventura; TEXAS: Houston, Kilgore, Odessa, Big Spring, Monahans, Pampa, Graham, Wichita Falls; OKLAHOMA: Ada, Healdton, Perry; NEW MEXICO: Eunice, San Fernando, TRINIDAD B.W.I.

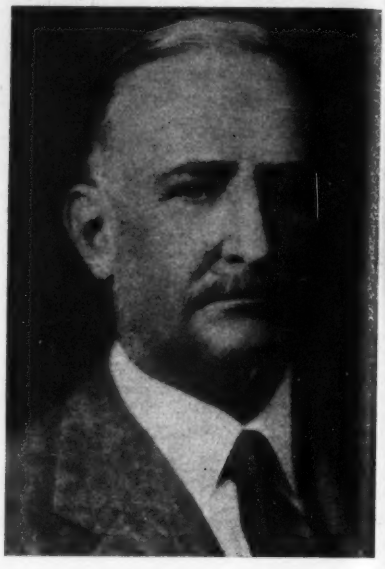
St. Helens Deep Test Is Montebello Strike

Climaxing the most important discovery of the past year, in the Los Angeles basin, St. Helens Petroleum Co., Ltd. completed its Montebello west end deep discovery well, Monterey No. 20, with an initial flow of 1400 bbls. Jan. 2.

Seeing no reason why good Miocene production should not be found in the west end of the field similar to that developed by Universal Consolidated, The Texas Co. and others on the east plunge, F. M. Ziegler, chief geologist of the company, decided on Monterey No. 20 as the well to carry down for the test. Located advantageously in respect to structure and with regard to the company's holdings, the well is approximately 1300 ft. west of Montebello Blvd. and 650 ft. north of Lincoln Ave. As the well had been drilled to and completed from 3710 ft. but little more than two years ago, mechanical condition of the hole was excellent, it being only necessary to pull the liner and deepen through the 11¾-in. water string. Oil sands, shales, and very hard conglomerates continued with occasional gray sands to slightly below 5400 ft. where an oil sand of fair body and saturation was encountered but not tested. Below the Miocene contact a 5800 ft. shale predominated to 6225 ft. where the top of the new horizon was encountered. After penetrating the sand, which apparently corresponds to the Nutt zone of the east end of the field, to 6353 ft. a formation test was made which resulted in the recovery of gas-cut, oily mud. Drilling mud, meanwhile, had shown a tendency to be gas- cut and oil colors on the ditch together with core recovery of an apparently light oil sand encouraged the company to set a string of 8⅝-in. casing at 6221 ft. To protect the higher, untested showings, this water string was cemented through perforations at 5400 ft. On first test, the perforation job proved a failure and it was necessary to re-cement to shut off the water. A test on the shoe was inconclusive due to the fluid rise being mostly oil and the Division of Oil and Gas allowed a production test to be made. On Dec. 19, with a perforated liner landed on bottom, the well was swabbed in flowing at the rate of 2500 bbls. cutting 50% with gas estimated at 5,000,000 cu. ft. Believing that the water originated at the casing shoe, the flow was killed and the well re-cemented. When again readied for a test, circulation was reversed and the well started to flow at the rate of 2200 bbls. per day through a 66/64-in. orifice with the cut rapidly diminishing to 2.0%. Bean size was immediately reduced to 7/8-in. and the first 24 hours gauge was 1400 bbls. of 38.6 gravity oil and 6,000,000 cu. ft. of gas testing .7 gallons per 1000 cu. ft. Now on its third week of production, the daily rate has settled to 775 bbls. of 39.0 gravity cutting 0.2% with a gas rate of 5,950,000 cu. ft. and pressures of 1050 lbs. on the tubing and 1450 lbs. on the casing.

Standard Promotions

R. C. Stoner



M. E. Lombardi

The board of directors of the Standard Oil Co. of California has elected R. C. Stoner, general manager of the producing department, a director. There was a vacancy on the board due to the death of K. R. Kingsbury in November, 1937.

Mr. Stoner was graduated from the University of California in 1912 and the following year joined the Standard Oil Co. His first work was in the geological division on the producing department in the home office at San Francisco. In 1917 he went to the San Joaquin Valley as a petroleum engineer. Two years later he returned to the home office where he served for a year. He spent a year in the Rocky Mountain Area in 1920 and from 1921 to 1924 he was manager of geological and exploration activities in Mexico. He returned to San Francisco in 1925 as assistant general manager of the producing department and became general manager in 1931, which position he has held up to this time.

The board of directors also elected M. E. Lombardi a vice-president. Mr. Lombardi has been a member of the board since 1927.

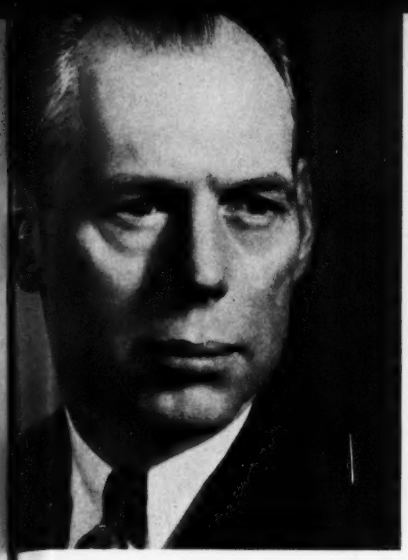
Cavins Releases Interesting Data

An attractive new Bulletin No. 38 has just been issued by the Cavins Co., 2853-73 Cherry avenue, Long Beach, Calif., illustrating and describing in detail the Cavins Automatic Hydraulic Suction Bailer and Fishing Tool.

Among the many uses of this tool as enumerated by the manufacturer are ordinary clean-out work, breaking hard packed sand bridges, cleaning out bridged over tubing, cleaning out around and below partially collapsed pipe, removing pea gravel used for tamping before shooting with "nitro" in open hole territory, fishing out junk, and cleaning out around large "fish." The principle of operation and its application in utilizing the potential energy of the fluid column in a well, are graphically illustrated and described in this bulletin which will be supplied on request to the manufacturer at the above address.

More than half of the motorists in the United States earn less than $30 a week.

Three out of five motorists in the United States have never purchased a new car.



C. D. Gard

Clare D. Gard, chairman of the technical committee, California Natural Gasoline Assn., heads the group which forms the real backbone of the organization. The technical committee treats all problems related to the progress of the natural gas and gasoline industry, and directs the development and standardization of methods of testing. The committee sets standards for liquefying gaseous petroleum products, and for the development and standardization of all factors concerned with equipment design and production. Clare Gard has been with Union Oil Co. in the gas department for 17 years. He is now resident engineer with headquarters at Santa Fe Springs.

Pres. J. G. Burks, O. C. Field Gasoline Corp. V-Pres. H. R. Linhoff, Richfield Oil Corp. Sec.-Treas. Wallace McIlhany, 510 W. 6th, L.A.

DIRECTORS

*** Executive Committee Member**

L. L. Aubert
Bankline-Norwalk Co.

A. H. Bell
Continental Oil Co.

A. H. Bradford
West Coast Refining Co.

*J. C. Burks
O. C. Field Gasoline Corp.

*J. A. Campbell
Lomita Gasoline Corp.

L. V. Cassaday
Lomita Gasoline Corp.

F. E. Coyle
Associated Oil Co.

F. E. Davie
Shell Oil Co.

Earle Derby
Standard Oil Co.

*H. L. Eggleston
Gilmore Oil Co.

O. C. Field
O. C. Field Gasoline Corp.

*P. E. Fluor
Fluor Corp.

J. P. Gasser
Seaboard Corp. of Dela.

*R. D. Gibbs
Union Cil Co.

*J. C. Gilbert
Barnsdall Oil Co.

R. H. Green
Signal Oil Co.

A. S. Hayes
Bell & Loffland, Inc.

R. E. Haylett
Union Oil Co.

*R. W. Heath
Signal Oil & Gas Co.

J. R. Hoffman
Smith-Booth-Usher Co.

S. F. Magor
Superior Oil Co.

*W. A. Kirk
California Southern Oil Co.

*B. A. Koehler
Pacific Western Oil Co.

W. H. Kraft
Honolulu Oil Corp.

*E. J. Lange
Associated Oil Co.

*H. R. Linhoff
Richfield Oil Corp.

CNGA

January, 1938

This section, a regular monthly feature of the California Oil World, is devoted to the activities of the California Natural Gasoline Association. The California Oil World is the exclusive official publication of the California Natural Gasoline Association, so designated by vote of the Association Executive Committee in a meeting on August 19th, 1937.

DIRECTORS

*** Executive Committee Member**

R. S. Lytle
Los Nietos Prod. & Refining Co.

*P. S. Magruder
General Petroleum Corp.

*William Moeller, Jr.
Southern California Gas Co.

*H. E. Moulton
C. C. M. O. Co.

*N. H. Mull
The Texas Co.

John Roger
Ingersoll-Rand Co.

W. D. Roper
Western States Gasoline Corp.

A. E. Schiltz
Del Rey Oil & Gas Co.

T. K. M. Smith
Industrial Fuel Supply Co.

W. D. Smith
Wilshire Oil Co.

*T. L. Taggart
Standard Oil Co.

*R. E. Tulin
Shell Oil Co.

Henry N. Wade
Parkhill-Wade, Inc.

R. E. Wells
Richfield Oil Corp.

*R. C. Wheeler
General Petroleum Corp.

W. M. Young
The Texas Co.

Taft Chapter Chairman

*Russell D. Wood
Honolulu Oil Corp.

General Committee Chairmen

Programs: B. D. Balthis
Natural Gas Equipment Co.

Entertainment: Jim Reed
Cooper-Bessemer Corp.

Membership: P. L. Armstrong
Union Steam Pump Co.

Technical: C. D. Gard
Union Oil Co.

Publicity: Dick Sneddon
Union Oil Co.

Advisory: H. R. Linhoff
Richfield Oil Corp.

Finance & Budget: H. E. Moulton
C. C. M. O. Co.

Auditing: H. A. Barrett
O. C. Field Gasoline Corp.

Simplified Absorption Control

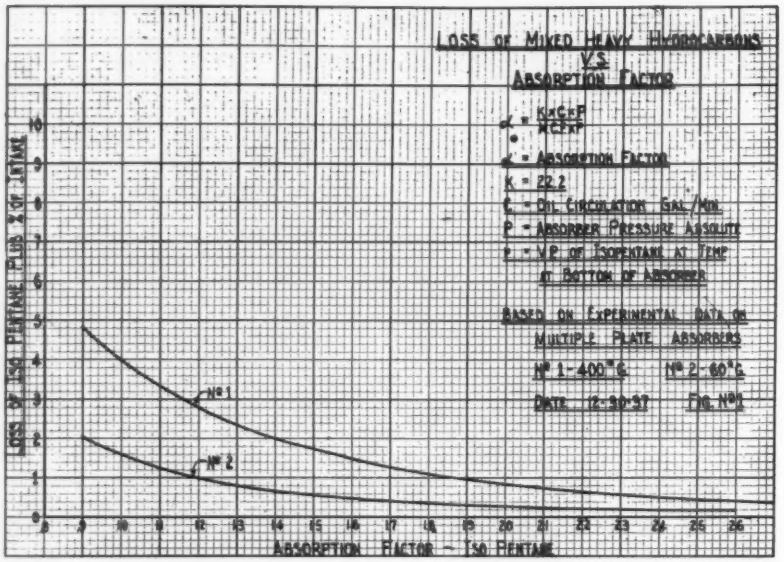
The principal function of the absorption plant is to extract the salable gasoline from the gas. Therefore, a discussion of a procedure designed to control the loss of gasoline should be of prime importance. The paper this evening, "Simplified Absorption Control," will discuss a method of controlling the isopentane plus content in the discharge gas.

**By G. M. Liljenstein,
Standard Oil Co. of California
at C.N.G.A. January Meeting**

The gasoline content of the gas leaving the absorber is due to two factors, namely, imperfect absorption and imperfect stripping. The extent of these losses can easily be regulated by means of adequate absorption and stripping controls. The methods to be discussed in this paper have been found to be adequate and reliable.

Absorption Control

The absorption control is based on "The Theory of Absorption" developed by Alois Kremser of the Standard Oil Company of California. This theory was presented to the Association by Mr. Kremser in 1930, and full information pertaining to it will be found in C.N.G.A. Proceedings, Vol. 5, Number 2.


LOSS OF MIXED HEAVY HYDROCARBONS
VS
ABSORPTION FACTOR
A = KxCxP / PCEXP
A = ABSORPTION FACTOR
K = 22.2
C = OIL CIRCULATION GAL/MIN
P = ABSORBER PRESSURE ABSOLUTE
P = V.P. OF ISOPENTANE AT TEMP AT BOTTOM OF ABSORBER
BASED ON EXPERIMENTAL DATA ON MULTIPLE PLATE ABSORBERS
Nº 1 - 400 #'s
Nº 2 - 60 #'s
DATE 12-20-37
FIG Nº1
LOSS OF ISO PENTANE PLUS & OF INTAKE
ABSORPTION FACTOR - ISO PENTANE
Nº 1
Nº 2

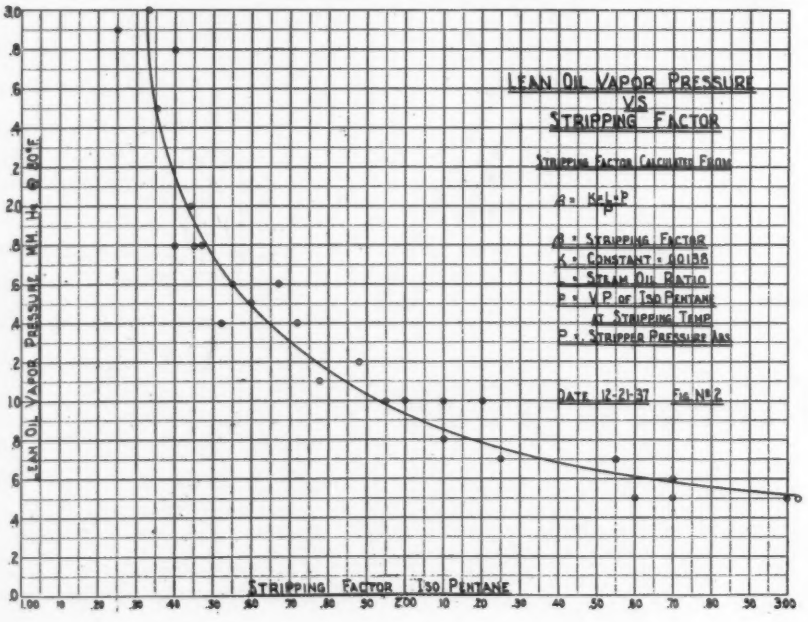

LEAN OIL VAPOR PRESSURE
VS
STRIPPING FACTOR
STRIPPING FACTOR CALCULATED FROM
S = KxLxP / P
S = STRIPPING FACTOR
K = CONSTANT = .00138
L = STEAM OIL RATIO
P = V.P. OF ISO PENTANE AT STRIPPING TEMP
P = STRIPPER PRESSURE ABS
DATE 12-21-37
FIG Nº2
LEAN OIL VAPOR PRESSURE MM. HG @ 80°F.
STRIPPING FACTOR - ISO PENTANE

Figure No. 1 shows two curves representing the isopentane plus content of the discharge gas vs. absorption factor. The curves show typical performances of similar absorbers, operating at pressures of 400 pounds and 60 pounds gauge, respectively. Losses were determined experimentally by fractional analysis and by the B. W. discharge test, which test will be discussed later. Absorption factors were computed using the formula shown on graph. By substituting fugacity relations for the partial pressure-vapor pressure relationship, the 60 pound and 400 pound curves can be reduced to a single curve.

The location and slope of the absorption factor curve will vary to a certain extent depending upon the properties of the lean oil and absorbed pentanes plus gasoline fractions, the number of plates in the absorber, and the plate efficiency. Absorption factor corrections can be applied to take care of variations in the properties of the lean oil, but the other variables are best taken care of by obtaining test curves experimentally.

However, it is not necessary to take these factors into consideration for plant control purposes. An arbitrary value of "K" can be used, providing the pentanes plus loss is determined experimentally against factors computed from this value. By means of this relationship it is possible to predict the gasoline content in the discharge gas due to imperfect absorption, when absorption factor and enrichment of intake gas are known.

The absorption factor to be used in individual plants will depend on the butane extraction desired and on an economic balance between loss of salable gasoline and operating costs. Except for peak loads of short duration, it will usually be found economical to extract all but a negligible amount of isopentane plus by operating in the flat section of the curve. Usually, then, the gasoline content of the dry gas can be attributed to imperfect stripping.

Stripping Control

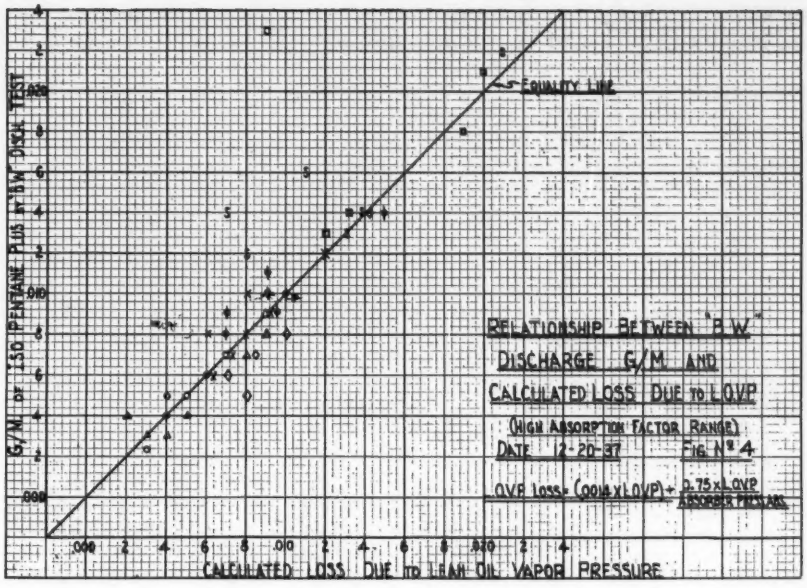
The loss due to imperfect stripping can be accounted for when we consider that the dry gas leaving the absorber will tend to reach equilibrium with the gasoline content of the oil entering. The

greater the volume of gasoline in the oil, the greater will be the loss from the absorber. To regulate this loss, a procedure designed to control the enrichment of the lean oil, and a test method that will properly indicate the partial pressure of the pentanes plus fractions in the lean oil, are required. Stripping factor control in conjunction with lean oil vapor pressure determinations has been found adequate for this.

Figure No. 2 shows a typical relationship between lean oil vapor pressure and stripping factor. Vapor pressures were determined experimentally in accordance with test procedure given in C.N.G.A. Bulletin S-343. Factors were calculated using formula shown on graph.

Theoretically, the stripping factor should be plotted against saturation of the lean oil. For plant control purposes, however, it is preferable to plot stripping factor against lean oil vapor pressure because the vapor pressure signifies the extent of the loss at the absorber due to imperfect stripping. This relationship should be determined for individual plants, because different curves will be obtained depending upon the saturation of the rich oil and upon the efficiency of the stripper.

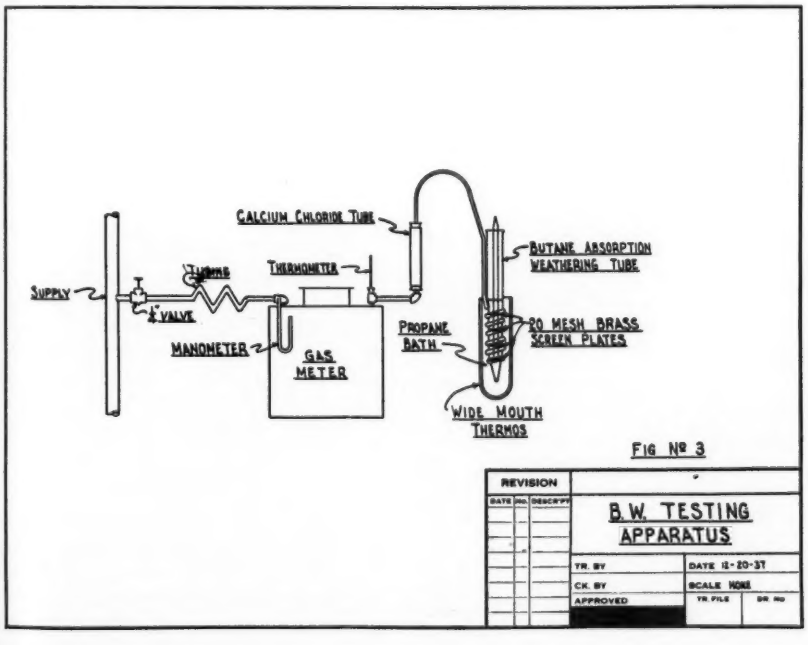
By neglecting the slight variation in stripper temperature and pressure, it is possible to control stripping by maintaining a constant steam/oil ratio, choosing a ratio that will correspond to the flat portion of the curve. The degree of stripping required will depend upon the loss at the absorber. The value of this loss can be computed from the following formula which includes a correction for fugacity:


G/M. OF 150 PENTANE PLUS IN B.W. DISK TEST
EQUALITY LINE
RELATIONSHIP BETWEEN "B.W." DISCHARGE G/M. AND CALCULATED LOSS DUE TO L.O.V.P.
(HIGH ABSORPTION FACTOR RANGE)
DATE 12-20-37
FIG. Nº 4
O.V.P. LOSS = (.0014 x L.O.V.P.) + 0.75 x L.O.V.P. / ABSORBER PRESSURE
CALCULATED LOSS DUE TO LEAN OIL VAPOR PRESSURE

$$\text{L.O.V.P. Loss} = \frac{(.0014 \times \text{L.O.V.P.}) + 0.75 \times \text{L.O.V.P.}}{\text{Absolute Absorber Pressure}}$$

where L.O.V.P. is vapor pressure corrected to absorber temperature.

It will be noticed that the loss is dependent not only on magnitude of the L.O.V.P., but also upon absorber pressure and temperature, the loss increasing with an increase in absorber temperature and decreasing with an increase in pressure. The determined vapor pressure, usually obtained at either 80°F. or at 100°F., must be corrected to absorber conditions by interpolating to find the value at the temperature corresponding to the temperature at the top of the absorber. Lean oil vapor pressure conversion curves shown in Bulletin S-343 can be used for this purpose. The absorber top temperature may be taken as the mean between temperature of oil in and temperature of gas out of absorber.



Responsibility of Plant Personnel

The relationships discussed above are used as a guide in determining the proper absorption factor and steam/oil ratio for individual plants. The plant crews are requested to maintain these factors and are required to make all changes necessary to insure efficient control of operation, and are responsible for maintaining all equipment in good operating condition.

It is necessary, then, that the operating crews be thoroughly familiar with all phases of the process and method of control. The management therefore provides the plant with operating innstructions and a plant manual that gives a brief but clear concept of the process or operation together with formulas, graphs, equipment design, capacity vs. load, etc., and expects the individual operators to familiarize themselves with this information and to be capable of calculating absorption and stripping factors.

Absorption is controlled by operator adjusting oil circulation rate to offset variations in gas load and oil temperature, to maintain a constant factor, using the absorption formula to calculate the oil circulation required.

Stripping is controlled by adjusting the steam rate to the stripper to correspond to oil rate, to maintain a constant steam/oil ratio.

Recorders, regulators and flow meters are installed where needed to maintain desired pressures, temperatures and flow rates, and all pertinent operating data, such as temperatures, pressures, oil rates, steam rates, gas volumes, factors, etc., are recorded on a plant log, a copy of which is sent to field office where personnel concerned review data to check on plant operation.

Testing

Theoretically, if all conditions in the plant remained constant, it should not be necessary to check operation by tests, but as variations and irregularities do occur, tests are conducted periodically by a trained testing personnel to determine the gasoline content of the discharge gas and the vapor pressure of the lean oil to check the efficiency of absorption and stripping. The frequency of testing is dependent on the importance of the plant and degree of variations in operating conditions. Lean oil vapor pressure tests are conducted more frequently than discharge tests, as the lean oil vapor pressure is influenced more by minor operating changes than the absorption loss.

The lean oil vapor pressure test is conducted according to procedure given in C. N. G. A. Bulletin S-343. It might be stated that some difficulty can be expected in obtaining accurate or check tests by an inexperienced operator, but by proper manipulation and by experience, accurate and reliable results can be obtained.

The discharge test employed is known as the B. W. Discharge Test (see Figure No. 3). Details of test will not be given as these are available in C.N.G.A. Proceedings for February, 1935. Briefly, the test consists of passing a metered volume of gas through a standardized solvent contained in an absorption tube which is immersed in a propane bath. A sufficient volume of gas is passed through the solvent to provide at least 2 cc's. of residue after solvent has been weathered to 34°F. (barometric pressure 760 mm.Hg.). This volume can be computed from the vapor pressure of the lean oil.

The enrichment of the discharge gas is calculated from the following formula:

$$\frac{G}{M} = \frac{R \times 0.1052}{M}$$

Where: G/M=Isopentane plus in gallons per thousand cubic feet.

R=Test residue at prescribed temperature.

M=Meter reading corrected for temperature, pressure and meter factor.

The value of this test is that it gives a result equivalent to the isopentane plus content of the discharge gas in a fraction of the time required by fundamental analysis. Test can usually be completed in two hours, and results indicate that the test is very responsive to variations in plant operating conditions and so forms a valuable guide for changes in operating instructions.

Copies of all discharge tests and L.O.V.P. determinations are forwarded to the plant and to the office where test data is reviewed by personnel concerned. Of particular value is the comparison of actual discharge enrichment to loss calculated from the vapor pressure of the lean oil, as irregularities in plant operation are readily apparent if values do not agree within a reasonable limit, taking into consideration any loss that may be due to low absorption factors.

Figure No. 4 shows relationship between B. W. Discharge enrichment and value computed from the vapor pressure of the lean oil, and represents data from seven plants operating at pressures ranging from 35 to 300 lbs. gauge. Disagreements as shown on chart are followed up by special tests to locate cause of discrepancy. Disagreement may be due to testing errors, faulty meters, unbalanced absorbers, crude contamination, etc. The disagreements shown on graph were found to have been caused by insufficient factor in one case and to fouling of the absorber by crude oil in the other.

Other control tests indirectly affecting absorption and stripping are also conducted periodically, but will not be discussed in this paper.

Summary

1. The absorption factor and stripping factor relationships furnish a theoretically sound basis for the control of natural gasoline plant residue losses.

2. A trained plant personnel, educated to understand these relations and instructed to operate under specific absorption factor and stripping factor conditions, is the best possible assurance that residue losses will be under control continuously.

3. The above operating system is rounded out by the recording of all pertinent operating data on a plant log and by a testing schedule employing simple check-up tests, such as those described in the paper, and designed primarily to detect variations from expected performance. These variations are readily apparent by a comparison of the actual determined discharge content with value computed from the vapor pressure of the lean oil and from the absorption factor relationship.

4. The absorption-stripping factor control system coupled with review of plant logs and comparison of theoretical enrichments with actual test results, provides the executives and management with a simple but highly satisfactory method of supervising plant operation.

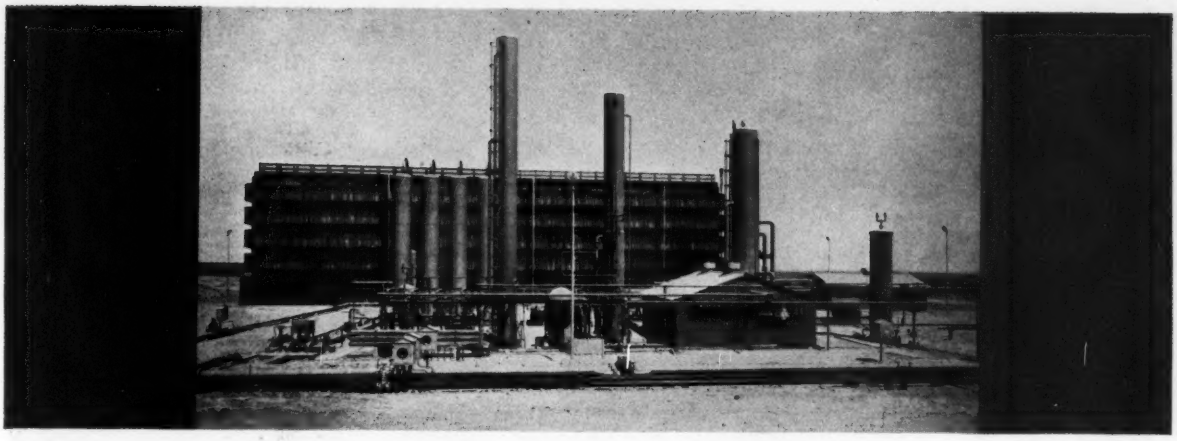
Calderwood Promoted

A. H. Calderwood

Appointment of Allan H. Calderwood to be manager of Martinez Refinery was announced today by G. H. van Senden, vice president of Shell Oil Co. Mr. Calderwood started with Shell in Los Angeles in 1923, his first positions being assistant draftsman and pipe fitter's helper. After intensive experience in all phases of petroleum manufacturing Mr. Calderwood was made assistant manager of Dominguez Refinery and then assistant manager at Martinez, the position from which he has just been promoted to be manager.

Mr. Calderwood succeeds E. D. Cumming, who goes east to join Shell Petroleum Corp. in St. Louis. Mr. Cumming is another Shell executive who started "at the bottom" as fireman in the Wilmington Refinery.

Both appointments are effective immediately.

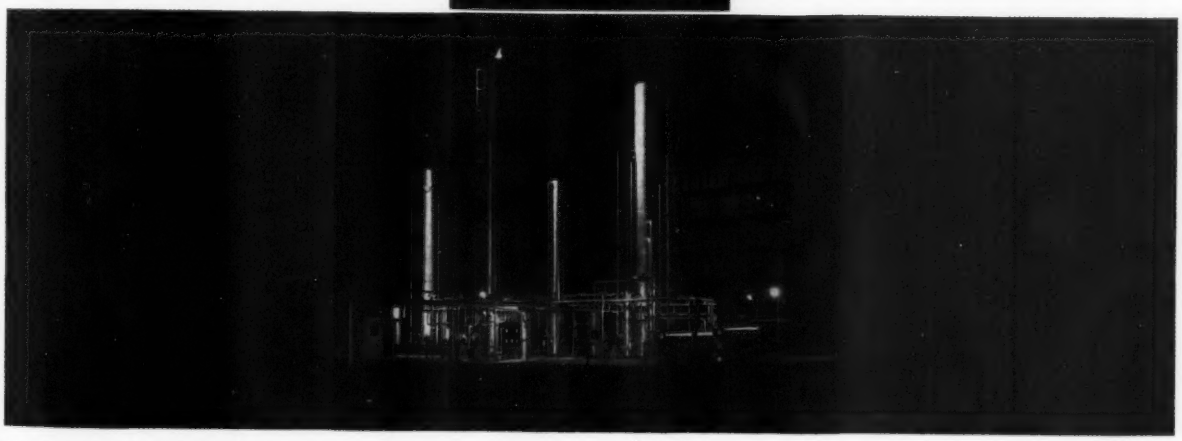


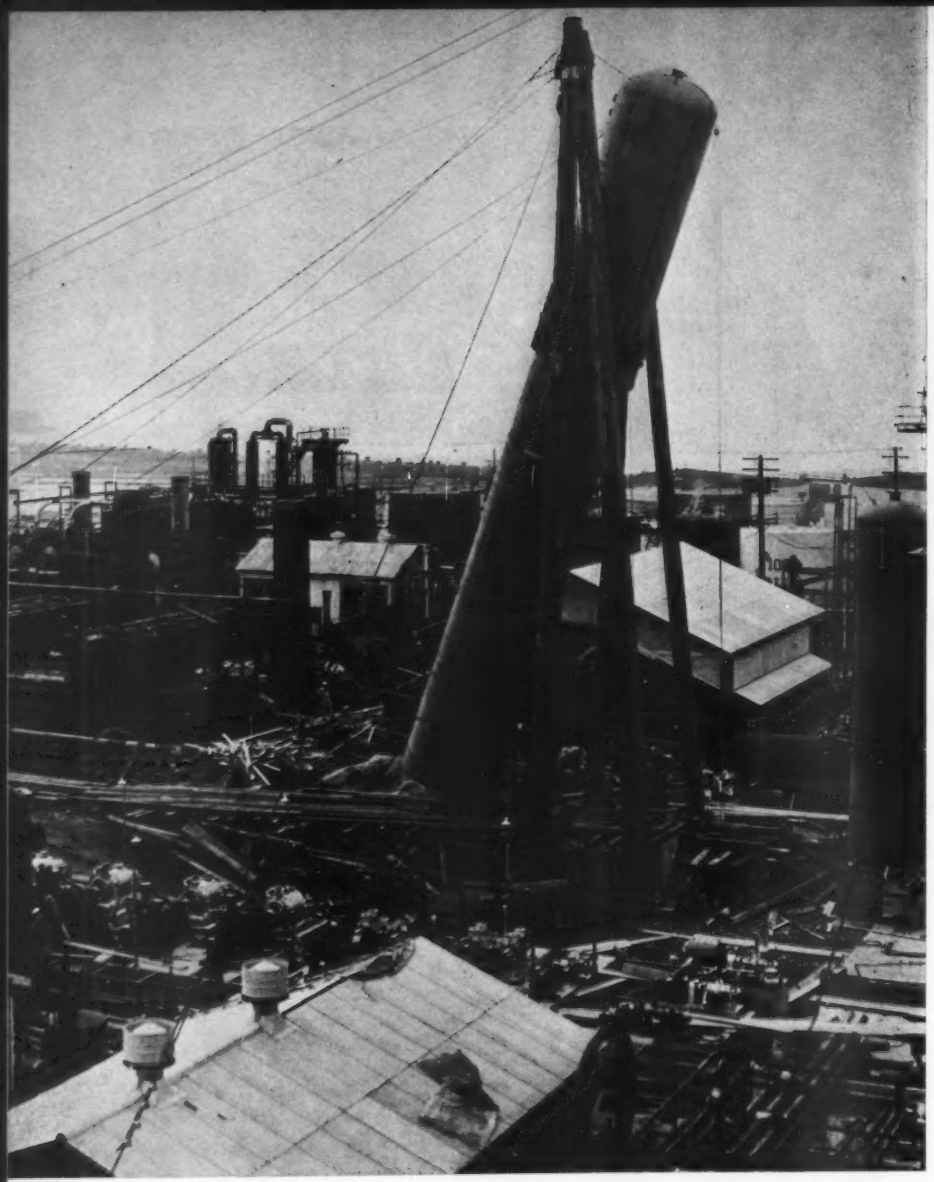
THE ONLY 2 CONTRACT ABSORPTION PLANTS BUILT IN CALIFORNIA IN 1937 WERE ENGINEERED ★ DESIGNED AND ERECTED BY

ABOVE: Belridge Plant No. 4. Erected at North Belridge, California for the Belridge Oil Company. Capacity: 80,000,000 cubic feet of natural gas per 24 hours at 450 pounds gauge and 75,000 gallons of 20-27 pound Reid gasoline.

PARKHILL-WADE
CONSULTING AND
CONSTRUCTION ENGINEERS
973 NORTH MAIN STREET
LOS ANGELES CALIFORNIA

BELOW: Night view of plant erected for Rancho Gasoline Corporation 5 miles north of Grapevine, California. Capacity: 20,000,000 cubic feet of natural gas per 24 hours at 450 pounds gauge and 15,000 gallons of 26 pound Reid gasoline.





This 150-ton bubble cap tower, as tall as the average 10-story building, was brought from Milwaukee and set up in one piece at the Oleum plant of Union Oil Co. Completion of this tower installation was the second step in Union's $2,000,000 expansion of the refinery on the eastern shore of San Pablo Bay.

Highlights in the construction of Union Oil Co.'s new $2,000,000 oil "cracking" plant at Oleum, Calif., on the eastern shore of San Pablo Bay, was the erection of the gigantic evaporator tower recently. The 150-ton vessel, as tall as an average ten-story building, was skidded to its foundation in one piece in an horizontal position and hoisted above its concrete base with some of the largest heavy-duty rigging equipment ever used. Setting the huge vessel, 93 feet long by 13 feet in diameter, upon its base was a delicate operation, as holes in the drum's bottom flange had to be fitted exactly over big anchor bolts set in the concrete foundation to receive them. Construction of this cracking plant is a second step in Union Oil company's expansion program. The first step, erection of a new $500,000 crude refining unit of 15,000 barrels daily capacity, has recently been completed and this unit is now operating at full capacity. The work was done under the supervision of Union's development department.

C. N. G. A. Taft Chapter Holds January Meeting

The January meeting was a symposium on "Belting and Belt Drives." Mr. Frank V. Rogers of W. C. Hendrie & Company, Inc., talked on the subject of "Leather and Rubber Belting and Conventional Drives." Mr. L. B. Warner, transmission engineer of the Rockwood Company, also had something to say regarding the transmission of power, including drives, pulleys, sheaves and power losses of different types of drives. Questions concerning belt cleaning, pulley crown, belt fasteners, belt replacement and friction were answered. The latest in drives was shown with a special demonstrator.

Mr. C. R. Burgess of Standard Oil Co. added to the diversion of the evening with a talk on "Operations in the Medicine Bow Oil Field of Montana."

Runs To Stills Down As Shipments Mount

Crude petroleum production increased 8,000 bbls. daily to 702,000 bbls. daily in the Pacific Coast territory during the month of November. Runs to stills decreased 40,000 bbls. daily to 568,000 bbls. daily but shipments increased 22,000 bbls. daily to 82,000 bbls. daily, the largest monthly total in the past twelve years. Stocks increased 2,500 bbls. daily. During the first eleven months of 1937 as compared to 1936, production increased 62,000 bbls. daily to 649,000 bbls. daily while runs to stills increased 35,000 bbls. daily to 556,000 bbls. daily and shipments increased 19,000 bbls. daily to 56,000 bbls. daily. Stocks were reduced 12,000 bbls. daily during 1937 as compared to a reduction of 15,000 bbls. daily during the first eleven months of 1936, and at the end of November, 1937, amounted to 30,202,000.

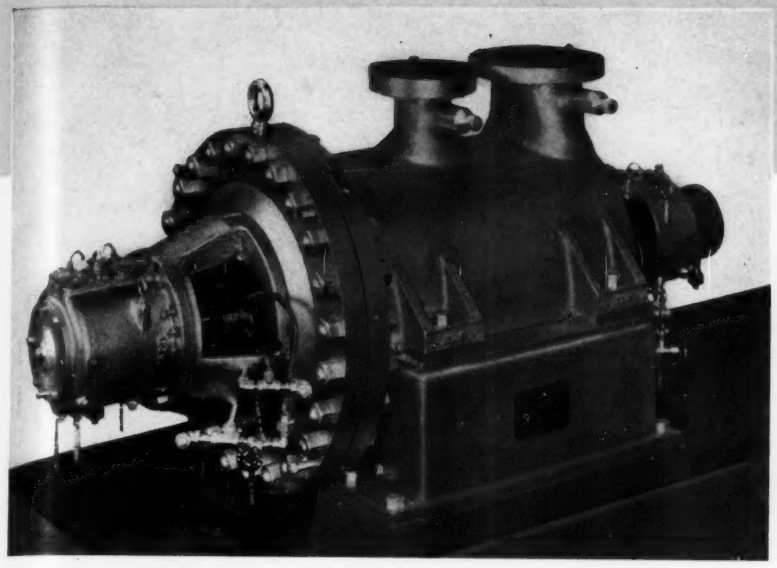
Natural Gasoline

Natural gasoline production increased 1,000 bbls. daily to 42,000 bbls. daily while refinery utilization decreased 2,000 bbls. daily to 39,000 bbls. daily. Stocks decreased 1,199 bbls. daily to 2,014,000 bbls.

Gasoline

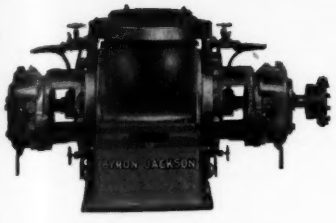
Gasoline production decreased 11,000 bbls. daily to 226,000 bbls. daily, due to decreases of 12,000 bbls. daily in straight-run production and 1,000 bbls. daily in production from natural gasoline as cracked production increased 2,000 bbls. daily to 72,000 bbls. daily. Domestic demand decreased 5,000 bbls. daily to 156,000 bbls. daily, but exceeded November, 1936, domestic demand by 3,000 bbls. daily. Shipments increased 5,000 bbls. daily to 57,000 bbls. daily, so that total demand remained at the October level, 213,000 bbls. daily. Stocks increased 9,000 bbls. daily during November. During the eleven-month period in 1937 as compared to 1936, production increased 9,000 bbls. daily to 220,000 bbls. daily, domestic demand increased 10,000 bbls. daily to 160,000 bbls. daily and shipments increased 1,000 bbls. daily to 57,000 bbls. daily. Stocks at the end of November were 672,000 higher than a year previous.

SAFETY · EFFICIENCY · ECONOMY
Have Won WORLD-WIDE ACCEPTANCE For
BYRON JACKSON PUMPS



DOUBLE CASE HOT OIL CHARGING PUMPS

The horizontally-split inner case permits assembly of complete rotating element IN THE SHOP, as a separate unit. Other features include: Both stuffing boxes under low pressure—Minimum number of parts—No diffusion Vanes—Capacities range from 2,500 to 40,000 barrels daily at pressures up to 2,100 pounds per square inch.



BYRON JACKSON SINGLE STAGE DOUBLE SUCTION PUMPS

Modern features include: Center support under nozzles eliminates pipe strains with resultant misalignment at high temperatures — Case and cover sealed by two circular gaskets in recessed seats, only one of which is broken to dismantle pump — Nozzles cast integral with case for disassembly without disturbing piping — Vertical nozzle arrangement simplifies piping and eliminates vapor binding in the suction — Two stuffing boxes at suction pressure — Negligible bearing loads — Field of application, 800 to 3,000 G.P.M. at temperatures up to 800 degrees F., against heads of 250 to 800 feet.

A single suction type, designed to overcome previous objections to single suction construction, will deliver from 15 to 800 G.P.M., at temperatures up to 800 degrees F., against heads from 75 to 400 feet.

VC 2-STAGE HOT OIL PUMPS

The vertically-split case, with circular gasket, is one of numerous safety features of BYRON JACKSON VC PUMPS that appeal to modern refinery operators. They are furnished in different sizes to handle from 20 to 4,000 G.P.M. of oil, at temperatures from 300 to 850 degrees F., on differential pressures up to 350 pounds per square inch.

O. L. MULTIPLEX PUMPS

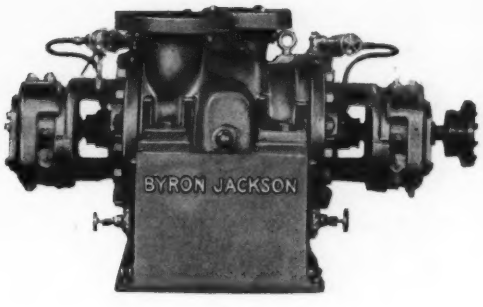
Although designated as "O.L." (Oil Line Pumps), the Byron Jackson MULTIPLEX has many applications other than for pipe line service. They are well suited to cold and warm oil charging service. Increased efficiency is due to the long external cross-overs which provide good hydraulic lines between stages. These pumps, of extremely rugged construction, are made in a wide range of sizes and stage combinations to meet every requirement.

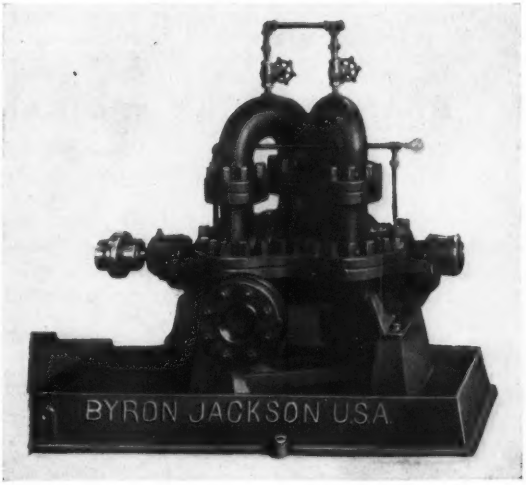
Your request for specifications will receive prompt and careful attention.

Since 1872

BYRON JACKSON CO.

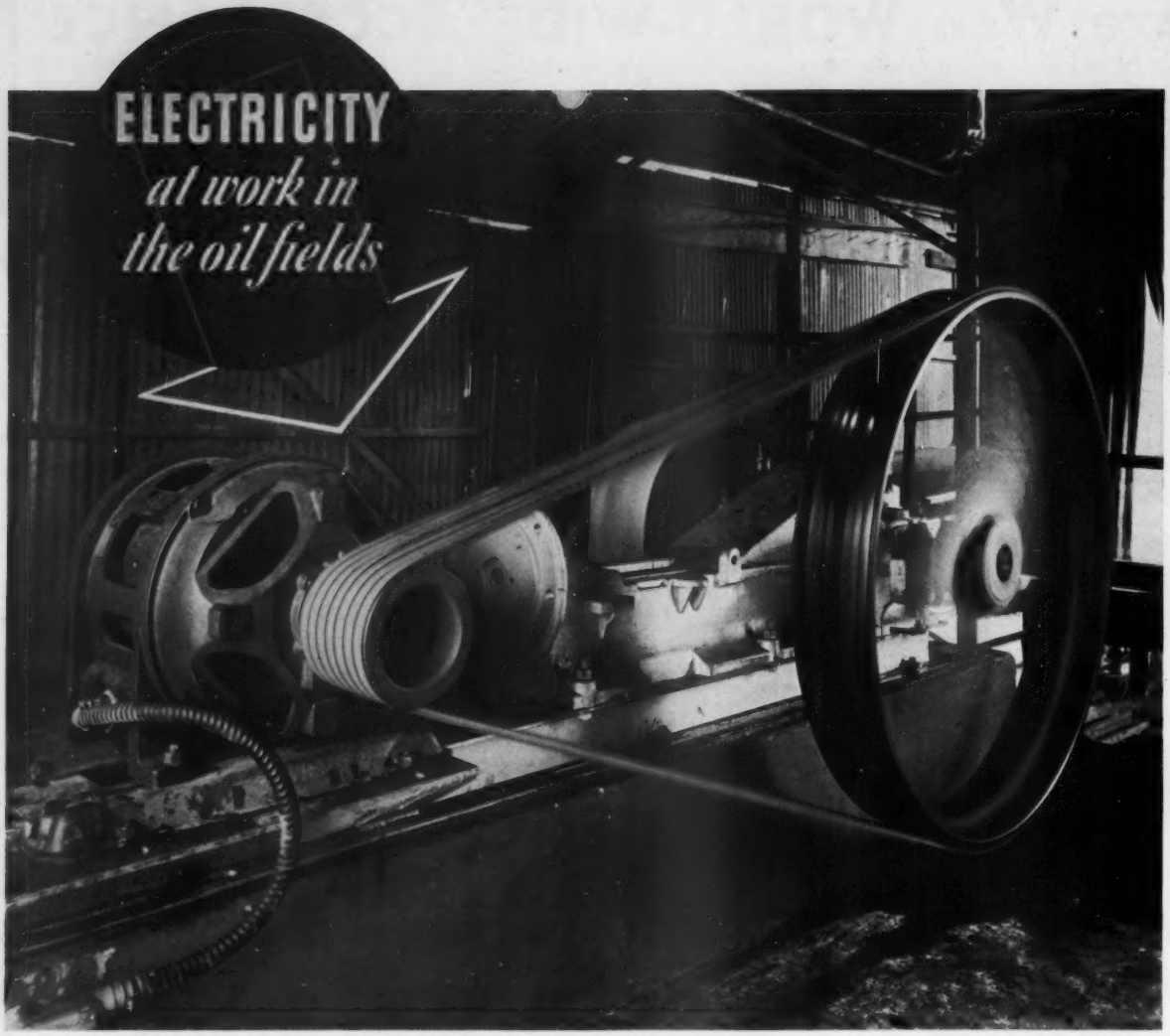
New York — LOS ANGELES — Fort Worth
Berkeley — Bethlehem





BYRON JACKSON

CENTRIFUGAL PUMPS FOR EVERY SERVICE



Here is a picture of one of the many electrical pumping units on the lines of the Edison Company. This unit was converted to electric drive from another source of power.

BEANS, BACON and BANANAS

When you are buying groceries you want your money's worth—good fresh food and honest weight at fair prices.

We haven't any bananas or bacon for sale, but we have lots of clean and convenient electrical power ready for immediate delivery—and at attractive rates.

There is a growing preference for use of electric drive in the oil industry, modernization of pumps the electric way, for instance.

When you are shopping for power, get Edison performance records and rates. You'll be pleased with the service you get from Edison engineers who know all about oil field electrical engineering. And you'll be pleased with Edison electricity when you put it to work on your job.

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

1-38

Purpose And Practice Of Fluid Level Determinations

The demand for efficient oil recovery has stimulated an interest in pumping problems. The study of these problems has brought to light wasteful and inefficient pumping practices which become apparent by accurate measurements of fluid-levels or bottom-hole pressures[1]. Progressive companies with their highly trained personnel are making wide use of such measurements. The relationship of these measurements to oil production will be recalled by a brief review of the principles of oil recovery.

Oil well production is possible only because the pressure in the formation is higher than the pressure in the hole. This difference in pressure forces the oil from the formation into the well, and the flow of oil is proportional to the pressure difference. Oil production will stop as soon as the pressure in the well becomes equal to the formation pressure. The pressure within the well is dependent, among other things, upon the height of fluid within the well. Therefore under ordinary conditions it is clearly advisable to maintain the lowest possible fluid level in order to obtain the maximum oil production. The operating fluid level within the well therefore becomes a datum of considerable importance.

There are in general only two practical methods of determining this operating fluid level. One of these methods involves the use of bottom-hole pressure gauges, which directly measure the fluid pressure when placed at the bottom of the well. These instruments require pulling the rods or tubing when lowered in the well, and another pulling job is necessary in order to recover the instruments and obtain the data which are recorded within the instruments. The cost of such measurements includes the cost of the instrument or rental charges, lost oil production during the time the well is shut down, and the cost of two pulling jobs, with the hazard associated with them.

The second method of determining the bottom hole pressure utilizes the direct measurement of the fluid sound measurements. These measurements are made by connecting to a valve or opening which is nearly always readily available in the casing head. This opening with a short nipple and a suitable gate valve or plug cock, provides the only attachment required. A gas-tight connection is made between the casing head and an instrument which contains both a special cartridge for initiating a sound wave, and a special selectively sensitive microphone to pick up the initial sound impulse and the desired sound reflections. This set-up at the well is illustrated in Fig. 1.

Fig. 1, shows the casing head connections in determining the fluid level in a pumping well with equipment employing acoustic principles. The recording truck may be seen in the background.

When making a measurement, the discharge of the cartridge generates a sound wave having a very steep wave front, which is necessary for accurate interpretation of the resulting record. The sound wave enters the casing head and travels down the annular space between tubing and casing, being gradually absorbed and partially reflected by the various obstructions it encounters. Small reflections are produced by tubing collars and strong reflections result from such obstructions as tubing catchers or liner tops, while a solid fluid surface will reflect practically all of the energy striking it, and will give a correspondingly large "break' on the record. The various reflections are transformed from sound energy into electrical variations by the special microphone. A small multi-wire electric cable connects this instrument with the recorder truck, which houses the necessary amplifiers, oscilloscope, recording camera, dark room, etc. In the truck the electrical variations from the microphone are amplified electrically to obtain the necessary energy to actuate the recording unit. Proper electrical amplification insures that the resulting record is a true indication of the reflections received and is not distorted by the characteristics of the device used for picking them up.

Ten minutes is usually ample time to make the necessary connections to the casing head, as shown in Fig. 1, and another ten minutes will see the first record ready for inspection. If there is in the well an exposed tubing catcher, liner top or other marker at known depth, these will be shown, as well as the tubing joints. During the measurements the pump is not stopped, and only in unusual cases is the gas production even temporarily reduced, for the primary purpose of these measurements is to observe the operating fluid level.

Supplementary measurements may be made to determine additional important operating characteristics of the well. If it is required to obtain the actual pressure at the pump, the gas is passed through a back-pressure regulator and equilibrium fluid levels are measured at one or more other pressures, to permit

[1]Stanley Herold, "Present Status of Bottom Hole Pressure Work", California Oil World, August 23, 1934.

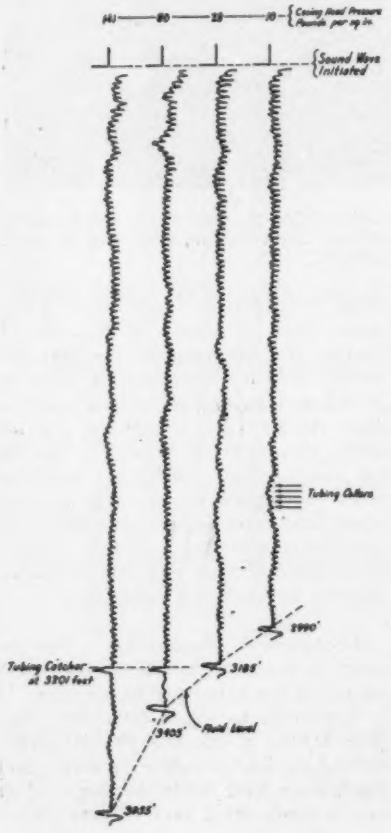
Morris Muskat, "Use of Data on the Build-up of Bottom Hole Pressures", AIME trans. Vol. 123, 1937.

TO50
1938
V.31 pt.1

evaluation of the density of the fluid column. However, the fluid column will not in general be of a uniform density. This variation in density must be determined before bottom-hole pressures can be calculated. The pressure at the pump then consists of the casing head pressure plus the weight of the gas column plus the weight of the fluid column down to the pump.

As an example, Fig. 3 is reproduced from a series of fluid level determinations on a well in the Los Angeles Basin. From right to left the casing pressures are 10, 28, 60 and 141 pounds per square inch and the corresponding fluid levels as measured by the sound device are 2990, 3185, 3405 and 3960 feet. In the last two runs the fluid is depressed sufficiently to expose the tubing catcher at 3201 feet, which provides an additional check on the depth as determined by counting the tubing collars. These fluid level determinations show that the first 18 pounds increase in casing pressure depressed the fluid level 195 feet, representing a column density of 9.2 pounds per square inch per hundred feet of fluid. The next pressure increment of 32 pounds resulted in a further depression of 220 feet, indicating a density of 14.5 pounds per square inch per hundred feet. The next increment of 81 pounds gave a depression of 550 feet and a density of 14.7. These densities are not abnormal for pumping wells in this field making a fair amount of gas, although solid fluid free of gas would show a density of about 35 pounds per square inch per hundred feet. Since the fluid-level measurements show that the density is practically constant for pressures above 28 pounds, we can extrapolate this density of 14.7 down to the pump. By using the known pump depth of 4605 feet we have a further pump submergence of 650 feet which corresponds to 96 pounds. This, added to the casing pressure of 141 pounds, gives a total of 237 pounds per square inch, to which we must add the weight of the gas column to get the true pressure at the pump. In this case the weight of the gas column is found to be 19 pounds per square inch, giving a total pressure at the pump of 256 pounds per square inch. In order for the oil to drain into the well it must overcome this bottom-hole pressure of 256 pounds per square inch. The less the bottom-hole pressure, the more oil recovered.

Fig. 2, above, shows operator of the new sonic operating fluid level measurement device recording fluid level echoes in a pumping well. Below, figure 3, are the records of fluid level determination on a well in th eLos Angeles Basin, showing depression of fluid level at different casing head pressures.



Another important datum concerning the production of a well is its productivity index. This factor is widely used by many companies and is the relation between formation pressure and production rate. It is defined as "the barrels per day of gross liquid produced per pound per square inch pressure drop at a specified subsurface datum" [2], but an alternative definition might equally well read, "the barrels per day of gross liquid produced per hundred feet depression of the fluid level below the static fluid level." The two definitions are of course connected by the relation between fluid density and pressure, namely: that the pressure due to the fluid column is equal to the height of the fluid column times its mean density. Productivity indices can be obtained in terms of pressures at the pump by determining the pressure at the pump as shown above, for different rates of production corresponding to different casing pressures. An alternative, and frequently more convenient procedure is to change the rate of production by altering the stroke of the pump or the speed of the driving unit. Then a new operating fluid level is determined when equilibrium is again reached.

The advantages of this method are not confined to pumping problems, but may be even more valuable in determining effectiveness of recovery. Fluid level measurements may also be used instead of the more costly pressure-bomb measurements in those instances where proration is based on absolute potentials or bottom-hole pressures.

Credit for the development of the acoustic method and apparatus for measuring operating fluid levels in oil wells accurately by employing sonic principles goes to Dr. J. J. Jakosky, assisted in laboratory and field work by Dr. D. D. Taylor and Richard E. Martin, all of International Geophysics, Inc., staff.

This organization has already entered into an agreement with one of the largest operating oil companies of California, governing the wide application of these measurements to the pumping wells of that company. Additional service trucks are being equipped for immediate operation in the major fields. It is indicated that the cost of this service will be around $25.00, plus mileage, for fluid level measurements on single wells, while the cost per well may be still further reduced where several wells are run at the same time in the sam field.

[2] B. P. Kantzer and E. G. Trostel, "Oil Well Performance", Amer. Pet. Institute; Nov. 12, 1937 Meeting.

C. V. Millikan & C. V. Sidwell, "Bottom Hole Pressure in Oil Wells", AIME Transactions, Petroleum Technology, 1931.

Kirby Richfield Division Manager

E. Kirby, formerly assistant manager of marketing for the Sinclair Refining Co., has been made manager of the Northern Division for Richfield Oil Corp. Mr. Kirby previously made his headquarters at Houston, Texas. In his new post, he will be stationed at Seattle, Washington. Mr. Kirby succeeds I. O. Heydenfeldt, who is being transferred to Los Angeles.

Test West of El Capitan

West of El Capitan, in sec. 34, 5-31, A. E. Tweedy and associates have spudded a test well south of the state highway.

LAUGH THIS OFF

In this issue at no extra cost we are opening with the theme song of the petroleum geologists:

Graphs of pebble pups remind us
We can build until we bust
And departing leave behind us
Just another cloud of dust.

And with all the exploration activity that is going on **Andy Kirk** says the drilling business is simply being run into the ground.

Mack McKinnon tells us, by the way, that they found another stowaway at the dinner table in a company boarding house up at Taft last week.

George Trembley claims to have overheard a couple of oil men discussing a hard boiled foreman under whom they were working. "Where was he born?" asked the first, and the other promptly replied, "Heck, that guy wasn't born, he was quarried."

We noticed a cute safety admonition on a drilling rig down at Huntington Beach a short time ago. It read, "To avoid accidents put your safety helmet on, and keep your head."

And when **Wynn Lynch** said to the roustabout's wife, "I hear your husband is convalescing now," she piped up emphatically, "No, sir, the reverse; he's actually gettin' better."

On the other hand, **Gus Wetzel** thinks it is absolutely unfair to designate a chief accountant as a figure head.

"How come I ordered six of these valves, and I can only find three?" asked **Charlie Perkins** of the equipment salesman, and the latter replied, "Don't worry, you'll find the other three on the invoice."

Which brings us to **Ted Sutter's** favorite golf story. We may have told this one before, but shucks, a fellow has to fill up the blank spaces somehow, so here goes: It seems that a golfer after a life of bad lies and vituperation was finally called by the grim reaper, and as might be expected, he was condemned to the nether regions. On his arrival there, much to his surprise he found that Hades was a vast and beautiful golf course. Such greens he had never seen, and the general layout was enough to bring joy to the heart of any golfer. To add to his entertainment there on a rack was a display of wood clubs, irons, and putters that was beyond criticism. He took down a good-looking driver and gave a few preliminary swishes, and just then up walked the old gentleman himself. "Where are the golf balls?" our golfer inquired. "There ain't any," replied His Nibs. "No golf balls!" yelled the divot lofter in astonishment. "No, sir," said the old boy, sadly, "that's the hell of it."

Among outstanding news makers in the oil industry are **Clint Erb,** divot lofter extraordinary, who recently made a hole in one at the Riviera Country Club, and **Doug Balthis,** who found a parking place on Broadway.

There is a persistent rumor going the rounds to the effect that a cable tool worker has been found among the members of the Whittier Rotary Club.

JUST AS THE NUMBER OF CALIFORNIA COMPLETIONS HAS INCREASED YEAR BY YEAR TO A NEW HIGH FOR 1937—
SO HAS THE PREFERENCE FOR BAKER CEMENT WHIRLER EQUIPMENT GONE UP & UP TO ESTABLISH NEW PEAKS IN POPULARITY
IT'S THE WHIRLING ACTION OF THE BAKER CEMENT WHIRLER FLOAT SHOE THAT GETS THE JOB DONE—THE FIRST TRY

Field Development

Los Angeles Basin

Long Beach Activity Up In Old, New Pays

Activity in the Long Beach field is now at its highest point in some time with 17 projects under way in the old proven area and the new northwest extension. Exploration for the extension sand has moved back into the field to Wardlow and Cedar where A. S. Johnston Drilling Corp. well No. 19 has set casing to test the interval 4530 to 4620 ft. One block east, Chiksan Oil Co. is deepening Wolter No. 1 below 6000 ft. During the boom of ten years ago many wells were drilled in this vicinity to the 6500 ft. sands.

Connecting the new area with the old, Hilldon Oil Co. is completing Amebco No. 3 from 4238 ft. from the Alamitos sand topped at 4150 ft. Encountering what may be an edge condition, John Abrams & Associates Willis No. 1 is still fighting water troubles, now standing cemented for the fourth time.

At the north end of the Oil Operators lease, Union Oil is drilling well No. 4 below 3500 ft. This well is being drilled from the same location as No. 3, the rig having been skidded less than 20 ft.

Across the railroad to the east Hilldon has erected a derrick for Bixby No. 1-A. Riggs have been built for two virtual wildcats, Kramildon Oil Co. No. 1, located 175 ft. south and 415 ft. west of the extended center lines of Wardlow and Magnolia streets, and Marvell Oil Co. No. 1, located approximately 400 ft. south and west of the Abrams well.

Sunset Oil Co. is again becoming active in the old field with a rig up for Whitney No. 1 across Orange Ave. from the cemetery. In the same area, Shell is spudding Cresson No. 15 and A. T. Jergins is preparing to deepen well No. 21 from 3523 ft. while Richfield has just completed Hass No. 19 for 245 bbls. of 24 gravity oil from 3025 ft. and Malcom-Davis No. 6 is being brought in from 3000 ft. At the corner of Cherry and Willow, Ed Powers' No. 3 well is nearing its completion depth at 3650 ft.

Shell's outpost, Hathaway No. 1, north of the east end of the field has shown little promise of success to present depth of 6150 ft., formation tests indicating oil sands cored thus far to be wet.

U. P. Adds 1500 Bbls. Daily In Wilmington

Adding three new wells with combined flush production of almost 1500 bbls., Union Pacific Railroad maintained its position of dominant leadership in the Wilmington field. In the northwest sector, R. T. Colter & William Gibbs McAdoo completed their second and third wells for a total of almost 600 bbls. Both wells were bottomed at 3650 ft. and are producing from below 2950 ft. In the central townlot area, Wilmington Oil & Development Co. completed another small well in the 5700-ft. zone. Bottomed at 5707 ft. water shut off was obtained by cementing the 7-inch casing through perforations at 5595 ft. and the well swabbed in with an initial flow estimated at 200 bbls. of 29 gravity clean oil.

Largest of Union Pacific's completions was EU-1, most easterly of the north line wells and on approximately the same Ranger zone contour as General Petroleum Blinn No. 1 in the Long Beach area. Drilled to 3250 ft., the 8⅝-in. water string was cemented at 2957 ft. and the well completed establishing a potential of 710 bbls. a day. Well No. 76 in the second line south of Anaheim was brought in from 3165 ft. with an initial flow of 595 bbls. and well No. 62, near Anaheim and Ford, was completed in the Ranger and upper Terminal zones pumping 195 bbls. cutting 15%. Diagonally across the intersection, Arpole Oil Corp. completed Black Gold No. 5 at 3530 ft. as a small well.

Willow Stockyards 3 Suspends At 6250 Ft.

Alford Development Co.'s wildcat, Classification Yards No. 3, located midway between Long Beach and the Watson refineries on Willow St. was suspended when no worthwhile showings were encountered to bottom at 6250 ft.

Planning Joint Test East of Montebello

A. S. Johnston Drilling Co. and Universal Consolidated Oil Co. operating jointly, are preparing to drill an exploratory test east of Montebello and near the town of Pico. The location chosen falls on Pico County Water District property in sec. 5, 2-11.

C.C.M.O. Deep Well Spurs Torrance Work

Activity in the Torrance field continues on an ascending scale with many independent operators preparing to deepen old wells, some of which have been abandoned for years. With the 125 bbl., 27 gravity production found in Chanslor, Canfield Midway Oil Co. Del Amo No. 34 as the objective, every available old stripper is being conditioned to take to 4900 ft.

Final production tests have been delayed in C. C. M. O. Co. Torrance No. 33 due to the necessity to cement a hole located in the water string at 1550 ft. Two weeks ago this well made a short flow at better than a 500 bbl. rate. Old wells in the active area vary in depth between 3700 and 3800 ft. with 8¼-in. casing cemented at 3500 ft. and a 6¼-in. liner on bottom.

St. Helens Active Near Basin Strike

Following completion of Monterey No. 20 for 755 bbls. of 40 gravity clean oil and 6,200,000 cu. ft. of gas, St. Helen's Pet. Co. started work on a new well, No. 24. Located south and west of the deep discovery, No. 24 will be drilled between the old producers, No. 9 and No. 10 just north of Lincoln Blvd.

Farther west and south of Lincoln, Thomas W. Simmons plans to drill on the Harry L. Masser property. Some years ago this lease was prospected to 3729 ft. by the Superior Oil Co., a depth which in the light of recent development was not sufficient to be conclusive.

Deepest well previous to Monterey No. 20 was Standard's Whitehead Comm. No. 2, located half way between Beverly Blvd. and Lincoln, long since abandoned at 6287 ft.

Abandon North Marker In N.W. El Segundo Area

Of outstanding significance to El Segundo operators was the recent abandonment of Howard Oil Co.'s Mary No. 1 which clearly marked the north limit of the field, in the northwest area. Carried to 7628 ft., the top of the conglomerate was noted at 7540 ft. and the top of the schist at 7600 ft., neither formation carrying any oil saturation.

Two Good Wells

Two wells were completed adding approximately 1300 bbls. of flush production. Swabbing in McCray No. 2, Richfield Oil Co. obtained an initial flow of 850 bbls. cutting 28%, while El Segundo Oil Co. rigged up gas lift to bring in Grauman-Wallace No. 1 at 560 per day. These wells penetrated the schist 325 ft. to 7355 ft. and 233 ft. ot 7195 ft. respectively.

In the townlot section, Wilshire Oil Co. has two wells approaching final depths.

Elsie No. 2-1 cored 12 ft. of conglomerate above the top of the basement at 7020 ft. while Security No. 2 topping the schist at 700 ft. found no conglomerate at all.

Gas Lift

Several flowing wells which showed rapid declines have been put on the gas lift with gratifying results.

Production of Government Refining & Gasoline Co. Copinger-Wallace No. 1 was increased by more than 100 bbls. per day, to 675 bbls., Copinger-Wallace No. 2 picked up from 170 bbls. to 850 bbls. and Lakeside Oil Co. Elsie No. 10-1 is making 100 bbls. after a week's swabbing failed to produce a natural flow.

Three Union Tests In Basin Deep Pays

Determined to find the full extent of its reserves in Los Angeles Basin fields, Union Oil Co. is working on three important deep tests. Bell No. 100 at Santa Fe Springs has so far received the greatest attention due to tests showing possibilities of obtaining production at the world record depth of 11,314 ft. With a 3-in. blank liner cemented at 11,215 ft., fluid was swabbed and bailed to 8000 ft. with only one flow, and that of short duration, recorded. As the tests are being made with open hole, difficulty has been experienced with the bottom sanding and the tubing clogging.

Now by far the deepest well ever drilled at Richfield, Chapman No. 29 is exploring below 10,275 ft. Structurally well located, this test should be the answer to the deep production question for the field.

Not far behind in depth is the Rosecrans test, Howard Park No. 35, now coring below 10,150 ft.

HERE'S A REAL CEMENT DUMP

PREVENTS DILUTION OF CEMENT MIX BY WELL FLUID

The new dumping principle of the Dale Cement Dump insures greater success in cementing. Now you can place your cement *exactly* where you want it in the hole. You can be sure it is *all* dumped in the right place—not strung out 'way up the hole. And—most important of all—because the cement actually *displaces* the well fluid as it comes out of the big opening at the very bottom of the Cement Dump, you can be sure your cement mix is not diluted or contaminated by being stirred up in and mixed with the muddy, oily fluid in the well. In dumping successive loads, no part of the bailer need enter the green cement dumped previously. Actual samples show that the cement column placed with a Dale Cement Dump is more compact—has higher strength—assures better cementing results.

Try the Dale Cement Dump. It works like a charm. It won't dump accidentally. It *does* dump *all* the load where and when you want it to—without spudding. Telephone, write or wire for complete information, TODAY!

Patent Applied For

★ DALE ★

SERVICE CORPORATION

3520 SCHAEFER STREET, CULVER CITY, CALIF. Phone SEquoia 2333

1520 - 28th STREET, BAKERSFIELD, CALIF. Phone 4903J

Assembly May Investigate Wilmington Drilling

Drilling in the Wilmington and other harbor areas will probably be investigated by the Assembly Interim Committee on Revenue and Taxation before the expected special session of the State Legislature is convened, according to Speaker William Moseley Jones. The proposed investigation is prompted by Governor Merriam's announcement that the special session will consider the state's rights in the harbor drilling activity.

Meanwhile a temporary injunction has halted operations on City of Long Beach lands.

San Francisco 2 Proves Newhall Test Failure

Tests to date in Barnsdall Oil Co. Rancho San Francisco No. 2 have proved disappointing to those closely following the well's progress in that apparently well-saturated oil sands cored to 6603 ft. have been incapable of fluid production. With bottom at 6374 ft., tests made below 6030 ft. and 6265 ft. showed a recovery of only a few bbls. of slightly gas-cut mud with no free oil.

LOS ANGELES BASIN WILDCATS

Los Angeles County

Area	Well	No.	Section	Depth	Status
Bellflower	Clayton, G. L. Scott	1	32, 3-12	6240	Idle
Brea	Pressel, Perry, Tull	1	30, 2-9	4560	Drilling
Castaic	Royal Land Corp.	1	8, 4-17	330	Drilling
Gardena	The Texas Co., Gardena	5-1	30, 3-13	6225	Drilling
Monterey Park	Monte Cristo, Garvey	1	27, 1-2	3505	Idle
Mint Canyon	Christien, J. P.	1	7, 4-14		Rig
	Mint Canyon	1	33, 5-14	750	Drilling
Newhall	West Coast Dev. Co.	1	27, 4-16	1300	Idle
	Barnsdall Oil Co., R.S.F.	2	26, 4-17	6450	Drilling in oil sand
Palmdale	Antelope Valley Pet.	1	17, 6-12	50	Tech. Spud.
Palos Verdes	Gene McLaren	1	27, 4-14	3992	Idle
	Hunter, Devlin et al	1	17, 4-14	5500	Plug 4500—Idle
	Rolling Hills Pet.	1	27, 4-14	2850	Drilling
Pico	British Am. O. P. Co.	1	12, 2-12	3990	Idle
	A. S. Johnson, Univ. Cons., Pico	1	5, 2-11		Foundation
Pico Canyon	Burt, A. G.	1	36, 4-17	2550	Idle
Puente	Julien, C. A., Koch	1	5, 2-9	2950	Idle
Towsley Canyon	Towsley Canyon O. Co.	1	8, 3-16	4100	Prep. to test
W. Long Beach	Alford Dev. Co., C. Y.	1	22, 4-13	6250	Idle
W. Coyote	Severns Drilling Co.	1	24, 3-11	7272	Redrill 4360

Orange County

Anaheim	Shell Oil Co., Harbeson	1	9, 4-10	8606	Idle

San Bernardino

Chino	Selegna Drlg. & Prod. Co.	1	12, 3-8	2200	Drilling

ENSIGN GAS Carburetors

ARE STANDARD EQUIPMENT ON THESE LEADING POWER UNITS

ALLIS-CHALMERS • BUDA • BUFFALO
CLIMAX • CONTINENTAL • CHRYSLER
HALL-SCOTT • HERCULES • INTERNATIONAL-HARVESTER • JOHN DEERE • KOHLER
LE ROI • MINNEAPOLIS-MOLINE • OLIVER
STERLING • WAUKESHA • WHITE • WILSON

Future advertisements will show ENSIGN equipment on various models of engines made by the above manufacturers. Watch for them!

ENSIGN CARBURETOR COMPANY, LTD.
LOS ANGELES • DALLAS • CHICAGO

ECONOMICAL UTILITY VALVES
DRACO

PIPE---BELTING
WIRE ROPE

Heavily stocked in popular sizes for immediate shipment and at surprisingly low prices.
Call PRospect 7208.

DRAKE SUPPLY CO.
1823 East Washington Blvd.
Los Angeles, Calif.

Long Beach Wells Tap Terminal Zone

While outlying sectors have so far been disappointing to those who expected large production throughout the entire harbor area, the central "Hot Spot" looks good enough to please anyone. The first to test for production was Superior Oil Co. 1960 No. 1, after plugging bottom from 4028 ft. to 3890 ft. and landing a combination 8⅝-in. liner. 1625 ft. in length and containing blank intervals 2670-2850, 3335-3375, and 3625-3685 ft., the liner was cemented through the top perforations at 2375 ft. and below the top two blank sections. Tubing was run and a packer set in the upper blank section allowing the Ranger to flow through the casing. Initial production from this zone was 100 bbls. in nine hours, while through the tubing the Terminal flowed over 4000 bbls. per day of 26 gravity oil cutting 3%.

Only a step behind were two G. P. wells, Harbor Comm. No. 1 and No. 6. Like Superior, No. 6 penetrated a doubtful formation below the lower Terminal zone and plugged back from 4049 to 3890 ft. while No. 1 stopped at 3939 ft. when oil sands began grading into shales. No. 1 was completed from both zones flowing 1545 bbls. of 19.5 gravity oil cutting 2.2% and No. 2 came in at a 2160-bbl. rate flowing 25.3 gravity clean oil from the Terminal zone.

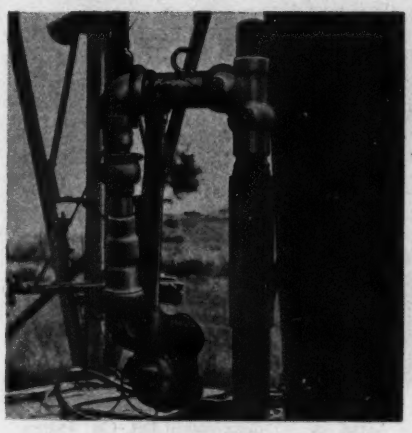
Following the leaders into the Terminal sands are Bankline Oil Co. U. P. No. 2, Hancock Oil Co. A-1, having set pipe over the Ranger at 2378 and 2350 ft., respectively. Long Beach Harbor Oil Co. No. 1 has set 11¾ at 2450 and Bankline U. P. No. 4 is coring for the Ranger at 2320 ft Westgate Greenland Oil Co. of Kansas City, which was recently awarded the contract to develop parcel "A" of city land, has three rigs completed for the first municipal wells between the entrance channel and G. P. Harbor Comm. No. 1.

Across the channel to the north, General Petroleum S. P. No. 2 landed a perforated liner on bottom at 4146 ft. and is preparing to complete from 1510 ft. of combined Ranger and Terminal zones.

First oil produced in the Long Beach extension of the Wilmington field was obtained by General Petroleum Corp. in Channel Comm. No. 3 January 12, 1938. Located near the intersection of Seventh and Pico streets, and the farthest east to locate the sand, the well set 8⅝-in. casing at 2870 ft. over the Ranger zone and plugged the bottom from 3352 to 3190 ft. where a perforated liner was landed. Swabbed in on a preliminary flow test, the first 24-hour gauge was 249 bbls. of 15.5 gravity oil with a 3.5% water content. General Petroleum's Blinn No. 1, most northerly extension well, was swabbed simultaneously with Channel No. 3 and came in flowing 125 bbls. of 16.6 gravity clean oil. Blinn No. 1 with 8⅝-in. casing at 2955 ft. was carried to 3464 ft. and plugged to 3295 ft. when upper Terminal sands appeared to be barren. Because of lack of facilities for handling production, Channel No. 3 is shut in pending completion of pipe lines. Evidencing its faith in the area, the company is preparing to spud Blinn No. 2 one location north of No. 1.

In the Mitchell and Broadway section, Allied Petroleum No. 23 cored through the Ranger finding only shale with streaks of unsaturated sand below 3050 ft. Bottom has been plugged from 3225 to 2990 ft. where a 6⅝-in. liner was landed and cemented through perforations at 2600 ft. After washing with water, the well started to flow naturally at 280 bbls. per day, 17 gravity cutting 10%. Across the street Richfield Guernsey No. 1 is deepening below 3000 ft. after setting water string at 2635 ft. while Caminol Co., No. 1-6 stopped at 2575 ft. and set 11¾-in. casing at 2550. Not satisfied with the findings of the Allied well, Richfield will explore for deeper horizons.

CHIKSAN "Poor Boys" SWIVEL



CONTINUOUS 360° ROTATION

IN BOTH VERTICAL AND HORIZONTAL PLANES

Oilmen everywhere are enthusiastically recommending the "Poor Boy's" Swivel as one of the handiest tools that ever went on a rig. It is a light auxiliary swivel that gives complete 360° swivelling in both vertical and horizontal planes . . . that safely withstands tremendous pressures without leaking . . . and that has nothing to tighten, nothing to get out of adjustment!

In addition, the "Poor Boy's" Swivel has an easily capped opening through which wire line instruments can be raised and lowered in the drill pipe while complete circulation and rotation are maintained.

Use this efficient tool in place of the regular drilling swivel to wash through bridges and other obstructions while going in the hole. It handles much faster, and permits using full stands of pipe instead of doubles—both time saving features!

Use it to maintain circulation and rotation while running wire line instruments. It prevents cuttings from settling, and eliminates danger of sticking the pipe.

Use it as a standby when emergencies arise. It allows circulation and rotation to be maintained while the regular drilling swivel, traveling blocks, drilling lines, etc., are repaired with the pipe in the hole.

These are only a few of its many money-saving uses. For complete information contact your nearest supply house, or write for illustrated literature!

Chiksan

CHIKSAN OIL TOOL CO., LTD.

FULLERTON, CALIFORNIA ★ PHONE 1254

BAKERSFIELD, CALIFORNIA ★ PHONE 5576

GULF ENGINEERS ★ HOUSTON, TEXAS

CHIKSAN ball bearing SWING JOINTS

San Joaquin Valley

Tests Show Greeley Is Small And Spotty

Contrasting sharply with the bright outlook of two months ago, Greeley at present looks nothing like the "wonder field" it was thought to be. Failure of outpost wells to encounter productive sands and small completions within the proven limits indicate the field to be of less extent than anticipated and the known productive area to be spotty. The only edge well to develop new production recently was Standard's KCL 11-8A which extended field limits a quarter of a mile northwest of the discovery well, KCL 11-1. Located in section 18, 29-26, KCL 11-8A cored the top of the oil sand at 7820 ft. and with bottom at 7845 ft., completed with an initial rate of 350 bbls. of 30 gravity clean oil and 100,000 cu. ft. of gas. With more sand open it is probable more production could be obtained, but danger of encountering bottom water was considered too great to warrant the chance. Indicating that the flow is possibly due to hydrostatic pressure is the unusually small amount of gas, which, with the present 300-bbl. oil production, is only 85,000 cu. ft. One mile due east, KCL 11-11, a north line well in section 17, was completed with a flush production of 500 bbls. of 35 gravity oil and 300,000 cu. ft. gas from 7810 ft. The oil sand here was topped at 7775 ft., 175 ft. lower than No. 12-2 half a mile northeast and 50 ft. lower than No. 11-6, one location west. Each of the latter wells established potentials of over 2000 bbls., 12-2 showing a maximum gas delivery of 2,400,000 cu. ft. and 11-6 over 10,000,000 cu. ft. After having been on for a week, KCL 11-11 gauged only 395 bbls. of oil and 200,000 cu. ft. of gas through a 56/64-in. bean with flow pressure of 50 lbs.

In the northwest corner of section 21, Superior Oil Co. Krause No. 1 found all sands barren to its suspended depth of 8178 ft. as did the Standard offset to the west, KCL 11-12, which cored the top of the Greeley zone at 7855 ft. and is now plugging back to redrill. Because of the poor showing of these wells, KCL 12-3, a northerly offset to Krause No. 1, has been abandoned at 5135 ft. A mile and a quarter north in section 9, Standard abandoned KCL 17-1 at 8500 ft. when no oil sand was found to that depth. The excellent producer, KCL 12-2, is located on a line with and half way between 17-1 and Superior's Krause No. 1.

South of Greeley in section 3, 30-26, Superior Oil Co. is preparing to redrill KCL No. 9 in an attempt to find production in the sand originally cored at 7550 ft. and which on a drill pipe test appeared to be good for 2000 bbls. of light oil. With 7-in. casing cemented on bottom, 7870 ft., and perforated in the hole, the well was wet. One location southwest, KCL 10 encountered no sands to 8403 ft. and was abandoned.

Deepen Near McFarland When Vedder Found Dry

Keystone No. 1, Shell Oil Co.'s wildcat test in sec. 4, 26-27 near McFarland, found the Vedder zone barren at 2815 ft., and is being deepened on the chance that productive measures may be found beneath.

Ready to Recomplete North Dome 4-18J

Just when ready to re-complete in the Avenal sand it discovered last summer, Kettleman North Dome Association well No. 4-18J, sec. 18, 21-17, was discovered to have a leak in the 6⅝-in. water string at 8450 ft. Drilled originally to 11,746 ft. a drill pipe fish caused the loss of the bottom 1000 ft. of hole, and as there had been no important oil sands cored below the Avenal horizon, the well was re-drilled to 10,860 ft. and plugged to 10,810 ft. where a 4¾-in. liner was landed and cemented through the top perforations at 10,770 ft. The well is scheduled for completion as soon as the casing is repaired.

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
	Fresno County				
Cantua Creek	Western Gulf SPL	4	3, 17-15	5450	Drilling
Coalinga	Petroleum Sec., Gatchell	2	18, 20-16	3775	Drilling
	Grimes, F. C.	1	12, 20-15	515	Idle
	Wilcox, J. F.	6	11, 20-14	350	Drilling
E. Coalinga	Pure Oil Co., SPL	1	31, 18-17	10225	Drilling
Ciervo	Superior O. Co., C.U.P.	1	20, 16-13	2350	Drilling
Clovis	Central Valley O. Co.	1	1, 12-20	470	Drilling
Jacalitos Hills	Jacalitos Pet. Co.	1	14, 21-15	5745	Drilling
	Dauphin Dev. Co., Boone	1	30, 21-14	3720	Drilling
Panoche Hills	Gauthier, J. A. Hubbard	1	12, 14-11	550	Idle
San Joaquin	Union Oil Co., Nicholson	1	17, 15-15	5960	Drilling
	Kern County				
Arvin	General Pet. Co., Pauley	1	22, 31-29	500	Idle
	General Pet. Co., Houchin	1	27, 31-29	7928	Plug 7361, Pump 100b/d
	Petrex, Inc.	1	32, 31-30	3140	Idle
	Union Oil Co., Berry	1	15, 31-29		Location
Belridge	General Pet., St. Helens	1	12, 28-20	6020	Drilling
Buena Vista	Ohio Oil Co., KCL	A-8	32, 31-26	2065	Drilling
Devils Den	Amerada Pet. Co., Beer	5	22, 26-19	6200	Drilling
	Little Major Oil Co.	1	36, 25-18	250	Idle
Edison	McClurken O.&C. Co., Metro	1	6, 30-29	2590	Idle
	Johnson, G.W. Brown-Paulette	1	33, 29-30	830	Drilling
Fruitvale	Shell Oil Co.	KCL A-58	29, 29-27		Rig
Grapevine	Honolulu Oil Co.	SPL-1	33, 12-19	6560	Drilling
	Ohio Oil Co.	D-2	23, 11-19	5891	Abandoned
	The Petrol Corp.	32-2	32, 11-19	2443	Drilling
	Universal Cons. Oil Co.	2	33, 11-19		Location
Greeley	Continental KCL B	1	12, 29-26	10205	Redrilled 9635 Abandoned
	Continental Oil Co.	KCL D-1	10, 30-26		Rig
McFarland	Shell Oil Co., Keystone	1	4, 26-27	3050	Drilling
Mt. View	Texas Co., Bastian	1	34, 30-29	3285	Drilling
Poso Creek	No. American O. Cons.	1	26, 27-27	3228	Abandoned
San Emigdio	Shell Oil Co.	KCL 4-26	26, 11-22	5820	Drilling
Temblor Hills	Chico Martinez-Exeter	2	1, 29-20	800	Drilling
Wasco	Continental Oil Co.	KCL A-2	8, 27-24	12640	Drilling
	Kings County				
Pyramid Hills	Pyramid Prod. Co., Retherford	1	27, 24-18	1525	Standing
Kettleman	Temblor Oil Co., Bunting	1	25, 23-18	9138	Idle
	Tulare County				
Ducor	Crusaders Oil Co.	1	1, 24-27		Rigging up
Trico	Standard Oil Co., Morris	1	36, 24-23	11475	Drilling

Ten Section Tests Seeking Full Data

In the Ten Section field, Shell Oil Co. has cored two more wells into the Stevens oil sand. On the north edge, A-32, in sec. 29, 30-26, entered the zone at 7927 ft. and is going ahead below 8025 ft. while B-27 in the southwest corner of sec. 30, has cemented 7-in. casing nine feet over the sand at 8000 ft. Bottom is 8299 ft. KCL B-85, near the east quarter corner of sec. 25, 30-25, and the field's most westerly well, is drilling below 7579 ft. Derrick has been erected for B-41 which will attempt to extend production south into sec. 32, 30-26.

With the intention of determining the full extent of oil bearing formation, Standard Oil Co. is deepening its Ten Section extension well, KCL 15-1 in sec. 27, 30-26. With bottom at 8070 ft. and 7-in. casing cemented at 8000 ft., oil of approximately 25 gravity entered a formation tester at a rate of 900 bbls. per day during a 45-minute test. Now coring ahead below 8140 ft., it is reported that very little additional oil sand has been uncovered.

Fresno Wildcatting Is Widely Scattered

With Fresno county wildcatting at its peak, nine wells are now drilling in widely separated areas. Western Gulf Oil Co. S. P. L. No. 4, sec. 3, 17-15, is now the most interesting as it approaches the 6400 ft. Temblor horizon from which well No. 3 produced 35 gravity oil at a 600-bbl. rate with a 50% water content.

In the Ciervo Hills, Superior Oil Co. is coring below 2620 ft. in Ciervo Unit Plan No. 1, sec. 20, 16-13. Near Clovis, Central Valley Oil No. 1, sec. 1, 12-20, is drilling at 500 ft. In the vicinity of Coalinga, Petroleum Securities is below 4000 ft. in Gatchell No. 2, sec. 18, 20-16; J. F. Wilcox in sec. 11, 20-14 has 350 ft. of hole in well No. 6 and F. C. Grimes completed a validation project at 515 ft. in sec. 12, 20-15. Deepest active wildcat in the county is Pure Oil's Southern Pacific No. 1 which is drilling below 10,330 ft. in sec. 31, 18-17, east of Coalinga. Near San Joaquin, Union Oil Nicholson No. 1, sec. 17, 15-15, is below 6000 ft. with no important showings. In the Jacalitos Hills, Dauphin Development Co. No. 1, sec. 30, 21-14 is deepening after obtaining a large flow of water from the Temblor topped at 3530 ft. and Jacalitos Petroleum Co. No. 1, sec. 14, 21-15, is fishing drill pipe with bottom at 5740 ft.

Shell Sidetracks Fish Near Canal Field Pay

When within only a few feet of the pay sand, Shell Oil Co. Canal A-72, in sec. 14, 30-26, twisted off drill pipe leaving 200 ft. in the hole to bottom at 8035 ft. Finding it impossible to recover, the well was plugged to 7700 ft. from which point new hole will be made to sidetrack the fish. The "Canal zone" is expected at approximately 8100 ft. in this location. Due to the delay met by Shell, Ohio Oil Co. KCL E-4 will probably be the new field's second producer as it is now approaching 8000 ft. in depth.

Deepening Brown-Paullette 1, Sec. 33, 29-30, Near Edison

Brown-Paullette No. 1, sec. 33, 29-30 east of Edison is being rigged to deepen from present bottom at 830 ft. Shutdown because of the tragic death of George W. Johnson in December, work is being resumed under the direction of Mrs. Johnson.

In California it's JENSEN JACKS!

Among producers in California this year, JENSEN Straight-Lift JACKS are destined to be the BIG NEWS.

They have made history in Mid-Continent and Gulf Coast fields. Product of 20 years devoted exclusively to the manufacture of pumping equipment, no other pumping unit rivals their economy and trouble-free performance.

They are now shattering precedents in California. They save rods. They save power. They minimize trouble. They lift oil with remarkable efficiency and economy.

Turn over an interesting new leaf in your 1938 operations—FIND OUT ABOUT JENSEN JACKS!

California Representative

A. V. TURNER

Box 642, Huntington Park

Huffman 5 Sidetracks Pipe From 10,222 Ft.

After several weeks of fishing, Superior Oil Co. has plugged Huffman No. 5 to 10,222 ft. to sidetrack the lost drill pipe. Bottom is at 10,440 ft.

Heading also for the Eocene is Standard's 27-21J in sec. 21, 21-17. Last reported depth was 9722 ft. in hard gray shale.

Ohio KCL A-8 Is Fast Buena Vista Gas Test

Now drilling below 2890 ft. Ohio Oil Co. is making good time with KCL A-8 in sec. 32, 31-26 in the Buena Vista gas area.

NORTHERN COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
Glenn	Ohio Oil Co., Willett	1	18, 20-2	4505	Gasser-uncontrolled
Humboldt	The Texas Co., Eureka	2	22, 3-1	7708	Plug 6473-shut in
Merced	Amerada Pet. Co., Carano	1	19, 10-11	7795	Drilling
Monterey	Anderson, A. A., Hillman	1	15, 24-14	3825	Drilling
	Elba Oil Co.	1	6, 13-2	4009	Cleaning out
San Joaquin	Standard Oil Co., Weyl-Zuckerman	1	25, 2-4	7650	Drilling
San Mateo	Bergman Oil Co.	1	10, 6-5		Location
	Wilshire Oil Co., Cowell	1	20, 6-5	6535	Drilling
Solano	Amerada Pet. Co., Deterding	1	36, 4-2	4457 pg 4130	Gas well-shut in
	McCormick	1	1, 3-2		Foundation
	Tracy Drilling Co., Hanson	2	36, 4-2	4380	Gas well-shut in
Sutter	Buttes Oil Fields, Ltd.	3	2, 15-1	6954	Completing as gas well

Each man had a HOLE lot to learn!

This man learned it from the Self-Checking SURWEL GYROSCOPIC CLINOGRAPH

"SURWEL" provides a map of the complete course of the well prepared from actual photographic records. It automatically makes two surveys at greatest speed, one going in and one while coming out of the hole.

Time required for making two surveys of a 6000 ft. hole on the wire line about two hours, on the drill pipe about four hours. (U. S. Patents 1,124,068; 1,812,994; 1,998,473; 1,959,141; 1,960,038; 2,006,556; 2,012,138; 2,012,152; 2,012,455; 2,012,456 and others pending.)

This man learned it from the Self-Checking SYFO CLINOGRAPH

"SYFO"—used on a wire line, as a "Go-Devil" inside the drill stem, or on sand or bailing line in open hole—affords quick, inexpensive daily records of vertical deviation in drilling, without the use of dangerous acids. (U. S. Patents 1,962,534; 2,013,875 and others pending.)

This man learned it from the Self-Checking H - K CLINOGRAPH Hewitt - Kuster

"H-K" designed for open holes only—provides permanent, accurate, photographic records of inclination and direction on paper discs five minutes after removing instruments from hole. (U. S. Patents 1,812,994; 2,027,642; 2,093,128 and others pending.)

. . . And many others are saving a HOLE lot of time and trouble with this new CORE ORIENTATION SERVICE

SPERRY-SUN'S Polar Core Orientation. (U. S. Patents. 1,792,639; 1,778,981; 2,089,216 and others pending) does not interfere with the progress of drilling. The orientation is determined in our laboratory, to which the selected cores taken by any type of core barrel in the ordinary course of drilling and properly marked, are shipped from any distances. No special equipment is required at the well, there is no loss of drilling time.

SPERRY-SUN WELL SURVEYING COMPANY
1608 Walnut Street, Philadelphia, Pa.

Pacific's Fanucchi 1 Fruitvale Extension

Extending Fairhaven sand production north into the center of sec. 14, 29-27, Pacific Oil & Gas Development Co. completed Fanucchi No. 1 flowing initially 110 bbls. in 10 hours through a one-inch bean. Bottomed at 3020 ft., 8⅝-in. casing was cemented at 2980 ft. and a 6⅝-in. liner including 40 ft. of perforations landed. As in wells in the northern part of the field proper, sand trouble was experienced almost immediately, making a clean-out job necessary.

California Western's section 14 outpost, KCL No. 1, cored the top of the Fairhaven at 3020 ft. and found streaks of gray in the oil sand.

Near the center of the southwest quarter of section 14, Western Gulf is starting work on KCL B-32, an offset to Fanuchi No. 1.

Southwest of Fruitvale, Shell Oil Co. is preparing to drill KCL A-58 as an exploratory test in section 29, 29-27.

Suspend Temblor Test In Sec. 25, 23-18

The Kettleman Middle Dome test of the Temblor Oil Co. located in sec. 25, 23-18 has been suspended after tests indicated the Temblor sands to be wet. Total depth is 9138 ft. with 4¾-in. liner cemented at 8960 ft.

Signal Kendon No. 4 Adds 300 Bbls. Daily

Completing No. 4 well on the Kendon property in sec. 35, 32-23, Signal Oil & Gas added 300 bbls. of 15 gravity oil to its Midway output. The well is 2345 ft. deep and is producing with 370 ft. of formation open.

Pioneer Unit Plan No. 1, cooperative test well being drilled by Texaco in sec. 33, 11-23, is now below 6538 ft. without having cored productive oil sands.

Deepen Grapevine Well In Section 33, 11-19

After making a location for a second Grapevine well in sec. 33, 11-19, the combined operators, Universal Consolidated, Barnhart-Morrow and Wilshire have changed plans and are fishing for the liner in No. 1 preparatory to deepening. The well was originally completed at 4468 ft. in 25 ft. of sand flowing 3,000,000 cu. ft. of gas and 55 bbls. of oil through a ¼-in. bean.

Reserve Oil Co.'s sec. 33 No. 3 is now flowing 170 bbls. and 3,100,000 cu. ft. with oil production steadily increasing.

Other wells active in the area are Honolulu Oil Co. S.P.L. No. 1 in sec. 33, 12-19 drilling at 6725 ft. Ohio Oil Co. D-2 in sec. 23, 11-19, is being abandoned and The Petrol Corp. Reserve-Petrol No. 1 is coring at 2975 ft.

Larkin 2, Sec. 12, 28-28 Sets Round Mountain Pace

Four recent Round Mountain completions totalling 1365 bbls. maintain the field's record as one of the most prolific yet discovered at shallow depth in California. H. A. McDonald's Larkin No. 2 in sec. 12, 28-28 set the pace with a 450-bbl. initial, with Marcan Oil Co. No. 2 in the same section, a close second with 415 bbls. Third was D. G. Vedder's Bell No. 4 in the same extension area with an initial of 285 bbls.; while Crestmont Oil Co. completed Staley No. 2 in sec. 8, 28-29 for 214 bbls. a day. Companies having projects underway are California Western, Eastmont, Marcan, Richfield, Petroleum Securities, Shell, Tampico and operating individually are Harry Long and D. G. Vedder.

In California-

JENSEN JACKS

are Sold and Serviced By

MEDEARIS OILWELL SUPPLY CO.

(Successor to California Bettis Company)

8638 OTIS STREET

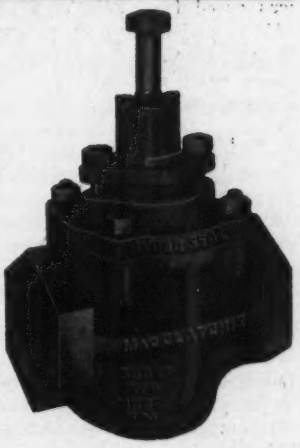
SOUTHGATE, CALIF. • Phone JEfferson 7285

BAKERSFIELD Phone 4448 • AVENAL Phone 421

VENTURA Phone 3984 • SANTA MARIA Phone 544

PATTERSON-BALLAGH Casing Protectors, Wire Line Guides, Stabilizers, Swivel Bumpers; LINK-BELT MUD SCREENS Sales—Parts—Rentals—Service; PERFORATED CASING; KERRICK-KLEANER, Hydro-Steam; JEFFREY ROTARY CHAIN; REX-CHABELCO CHAIN, Reconditioned Chain; ECOLITE LANTERNS; EDWARDS WIRE ROPE; TROJAN STEAM TURBINES; SECURITY CAT LINES & ROPE; JENSEN PUMPING UNITS; SECURITY VALVE; AND OTHER STANDARD ITEMS.

NO MATTER WHAT YOUR VALVE REQUIREMENTS



. . . there's a MacClatchie "Hydro-Seal" Plug Valve to fill them. MacClatchie Plug Valves are made in sizes from ½" to 20", working pressures of 250 to 3,000 pounds, hand or gear operated, and with union, flanged or threaded ends.

In **every model** you get the plus performance of MacClatchie's exclusive "Hydro-Seal" principle—grease expanded lips that spread evenly against the walls of the body and insure an absolutely pressure-tight seal under all conditions. A simple turn of the grease screw maintains the seal and completely lubricates the entire plug—a further check against leakage. In high pressure models easy turning is assured by elimination of compressible packing and the use of ball bearings to carry the thrust load.

MacCLATCHIE MFG. COMPANY

COMPTON, CALIF. HOUSTON, TEXAS

Export: Geo. R. Woods, 17 Battery Place, New York, N. Y.

Coastal District

Intense Activity In Santa Maria

Second only to Wilmington in point of activity, Santa Maria Valley development continues at a rapid pace with sixteen wells actually drilling and many more preparing to start. Eight wells have been recently completed with initial rates ranging from 154 bbls. in Union Oil Co. Security No. 1, to 2350 bbls. in Dugan Oil Co. Yelkin No. 1. Section 27 retains its right to the "Hot Spot" title by virtue of six new projects, five drilling wells and three good completions.

Most Interesting Outposts

Most interesting of the outpost wells is Petroleum Securities Co. Rembush No. 1 in the northeast corner of sec. 35, now completed for 500 bbls. of 12 gravity clean oil.

Apparently productive oil sand was cored at the base of the Sisquoc, but the Miocene, topped at 4815 ft., proved barren to 5260 ft. With formation tester set at this point and hole open to 5321 ft., 12 gravity oil rose to within one stand of the surface in 40 minutes. This is the heaviest oil yet found in the Cherty Shale. Bentonitic brown shale was cored from 5350 ft. to bottom at 5432 ft. and because of its low porosity is not considered productive. 8⅝-in. casing has been cemented at 5200 ft. and a perforated liner has been landed.

E. H. Moore's southwest test well Union Sugar No. L-10 (formerly No. 5), was abandoned at 6345 ft. after tests of the Monterey, topped at 6145 ft., recovered only gassy mud and salt water.

At the east end of the field Hancock-Bush, California Lands No. 2 in sec. 30, 10-33, redrilled to 4311 ft. and is completing on the pump after swabbing failed to make the well flow. Three quarters of a mile west in sec. 25, 10-34, the combined operators obtained a 1500-bbl. yield from Hopkins No. 3. Bottom was plugged from 4885 ft. to 4820 ft., leaving 685 ft. of formation open.

Jones-Gallison No. 2 of California Lands, Inc. in sec. 26 has picked up the Sisquoc oil sand at 4690 ft. and is now coring for the Miocene markers.

Anti-Trust Trial Resumed

With Dr. John W. Frey, former member of the Petroleum Administrative Board, completing his testimony, the government's anti-trust suit against certain oil companies and individuals was resumed in Madison, Wisconsin, on December 28.

Glenn Co. Wildcat High Pressure Gasser

Blowing in from 4505 ft. as a wild gasser, Ohio Oil Co. Willard No. 1 located in section 18, 20n-2w, near the town of Willows, created a sensation among oil men and Glenn county residents alike. Most northerly of active wells in the Sacramento Valley, Willard No. 1 has been watched with especial interest due to the similarity between geology found here and in the Marysville Buttes 30 miles south, where gas pressures of 4000 lbs. have been encountered in wells drilled by Buttes Oil Fields, Inc.

After penetrating a hard sand formation to 4505 ft., it became apparent that the drilling mud was becoming dangerously gas-cut and every effort was being made to increase its density when the fluid began to pour from the well. Although equipped with the latest type of blowout preventer which had been regularly inspected and tested, it failed to function, probably due to faulty centering of the drill pipe, and soon gas was roaring through the derrick at a rate estimated over 50,000,000 cu. ft. together with a strong flow of muddy water. With only 500 ft. of 13⅜-in. surface casing in the hole, the gas quickly cut around the pipe, forming a crater which within a few hours engulfed the rig and drilling equipment.

Though still flowing large quantities of mud and dry gas, subsurface caving is gradually choking off the well and it is probable that the geyser's life is drawing to a close.

No oil is apparent in the flow, but of great significance is the discovery of another commercial gas field in the northern part of the state.

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
Santa Barbara County					
Cat Canyon	Standard Oil Co., Los Flores	1	27, 9-33	3830	Redrilling
Gaviota	Gaviota Oil Co., Hollister	1	35, 5-33	3205	Shut-in—Gasser
	Wilshire Oil Co., Hollister	1	35, 5-33	350	Drilling
Refugio	Tweedy, A. E., Penn.	1	34, 5-31	1575	Drilling
Santa Rita	O. C. Field Gas. Co., S.R.	1	11, 7-33	3360	Testing
Summerland	Gauthier Oil Co.	17-1	22, 4-26		Rig
San Luis Obispo County					
Elkhorn	Calif. Prod. Co.	1	6, 10-24	1055	Drilling
	Western Plains Oil Corp.	1	7, 31-21	4010	Cleaning out
Paso Robles	Ajax Land & Dev. Co., Moss	1	27, 26-13		Rig
	Vanguard Oil Co.	1	14, 37-14	4200	Drilling
Ventura County					
Bardsdale	Little Canyon-Snodgrass	1	32, 4-19	1305	Idle
	Union Oil Co., Robertson	16	12, 3-20	6804	Cleaning out
Camarillo	Richfield Oil Co., McFarland	1	13, 1-21	7740	Drilling
	So. Calif. Drlg. Co., Daly	2	26, 2-21	3090	Idle
	The Texas Co., Edwards	1	19, 2-21	5875	Drilling
Oxnard	Oxnard Oil Co., Vanoni	1	10, 1-22	6302	Plug 6200, Abandoning
	Walter G. Rowe Johnson	1	15, 1-22	2575	Drilling
Ojai	High Mesa Oil Co.	1	16, 4-22	1280	Drilling
Red Mountain	Arnett, Frank E.	3	15, 4-21	1167	Drilling
Sespe	Colima Oil Co., Burge	2	29, 5-19	3497	Cleaning out
	Commander Oil Co., Temescal	6-F	13, 4-19	2030	Testing
		7-F	13, 4-19	215	Idle
	Condor Oil Co.	1	6, 4-19	2195	Cleaning out
	Garmack Oil Co., Orcutt	1	28, 5-19	375	Drilling
	Crosby	1	14, 4-19		Grade
	La Salle & Van Desan	1	17, 5-19		Grade
	Skyline Oil Co.	6	13, 4-19	2640	Drilling
	Speik Oil Co.	1	33, 5-19	3440	Idle
	Terry, Geo., et al	1	23, 5-20	1340	Idle
	Vai, Giovani Scott	1	4, 4-21	1910	Drilling
	Williamson Oil Co.	1	1, 4-20	540	Idle
Simi	Trucano, Germanina	1	5, 2-17	940	Drilling
Shiells Canyon	The Texas Co., Shiells	134	4, 3-19	4480	Plug 3814, Testing
South Mt.	The Texas Co., Richardson	5	13, 3-21	250	Drilling
Tar Creek	Section 20 Oil Co.	1	20, 5-19	1150	Drilling
Timber Canyon	Stallings, Senter, Ahlberg	1	24, 4-21	495	Drilling

Testing Limits In S.W. Sec. 21 Area

Joseph Anderson is getting underway with his important test in lot three of the Paderewski Subdivision, which if successful, will extend the first half a mile southwest of the established production in sec. 21.

Union Oil Co., most extensive operator and discoverer of the field, completed three wells and has six others in various stages of development. Security No. 1, an offset to Union Sugar No. 2, has settled to 85 bbls. a day cutting 8%, while Acquistapace No. 1 in sec. 22 and Bradley Lands No. 2 in sec. 25 are on for 435 bbls. cutting 2.3% and 515 bbls. cutting 4% respectively. The recently spudded Bettiga No. 2 in sec. 24 is now the company's only drilling well. Rigging up are Moretti No. 3 and Vicente No. 2 while Wheat No. 1 is a rig. O'Donnell No. 2-1 is grading the rig site and Silva No. 1 location is being surveyed in sec. 24.

In sec. 21, Pacific Western brought in Hobbs No. 6 making 650 bbls. from 315 ft. of Monterey open to bottom at 4988 ft. and Ohio Oil Co. is completing its third Moretti well from 4259 ft. after coring the Sisquoc oil sand at 3970 ft., the Chert zone at 3995 and the Franciscan at 4250.

Sec. 27 North Half Remains "Hot Spot"

With more than ten square miles considered proven or semi-proven, the north half of sec. 27, with its many small properties, shows nearly half of the activity of the entire field. Not known to be productive until the completion of the S. M. well in September of 1937, development work has since been intense and highly competitive, resulting in the completion of a number of good wells, most recent of which are Dougan Oil Co. Yelkin No. 1, Signal Oil & Gas Co. Ramalho No. 1 and Geo. Getty, Inc., Vicente No. 2. Finished at 4685 ft. with 320 ft. of Monterey open, the Dougan well flowed at 2350 bbl. rate on its first gauge while Vicente No. 2, bottomed at 4655 ft. in Franciscan after topping the Monterey at 4250 ft. was mechanically completed and shut in.

Signal's Ranalho No. 1 cored the Monterey from 4240 ft., penetrated the Franciscan two feet to 4621 ft. and completed with an 1800-bbl. initial.

Projects now drilling include Edco Oil Corp. No. 1, Signal Oil & Gas Co. Ramalho No. 2, Pacific Western Oil Corp. Samarin No. 2, F. E. Jones' Wisconsin-

Houchin No. 1 Shut In After 125 Bbl. Showing

Petrex, Inc. has suspended drilling in well No. 1 in sec. 32, 31-30 at 3141 ft. pending rebuilding the derrick and installing heavier equipment.

On the pump from the interval 7300-7350 ft., General Petroleum Co. Houchin No. No. 1 produced 125 bbls. a day of 30.6 gravity clean oil before shutting in. North of the Houchin well, Union Oil Co. has made a location for Berry No. 1 in sec. 15, 31-29.

Waddell No. 1, DeLaine Oil Corp. Mills No. 3 and Walter Hughes Oil Co. Munger No. 1.

Shell Gets Good Ventura Av. Well

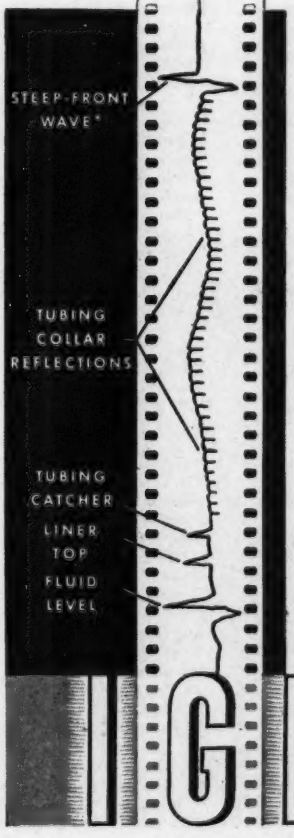
Largest Ventura Avenue well in some time was recently completed by Shell Oil Co. when Taylor No. 92 came in for 3840 bbls. of 30 gravity clean oil from 8484 ft. The 4¾-in. liner was perforated from 7738 ft. to bottom with blank intervals from 8030 to 8240 ft. and from 8330 to 8360 ft. Taylor No. 145, completed at the same time, flowed initially 610 bbls. cutting 10%. Re-drilled bottom is 6282 ft. Tidewater Associated Oil Co. after plugging V. L. & W. No. 32 from 7430 to 7210 ft. obtained a flow of 1325 bbls. cutting 8%.

INTRODUCING

the Electrical

ECHO-METER

for accurate fluid level determinations



Location of the Fluid Level in a pumping well is of vital importance! To get maximum production and greatest pumping efficiency, it is necessary to maintain the proper Fluid Level. Maximum drainage into your well is obtained with a low Fluid Level. Don't let the oil drain to adjacent wells. • With the Electrical ECHO-METER, an *accurate operating* Fluid Level Determination can now be furnished *in a few minutes* and *at a small cost, without shutting down the pump, pulling the rods or tubing, or interfering with production in any way.* • Location of the Fluid Level is obtained by recording on a film the time required for a Steep Front Wave* to travel from the casing head to the Fluid and return. In addition to the reflections from the Fluid Level, other reflections are obtained from tubing collars, tubing catchers, liner tops, etc., providing a complete record.

EXTREMELY LOW IN COST

The average cost for a single Fluid Level Determination with the ECHO-METER is only $25.00 per well, plus 8 cents per mile for the truck; additional wells in the same day result in a further saving. • For Fluid Level location, use ECHO-METER Service. It's *Accurate, Inexpensive, Safe* and *Fast*. It's Better!

*Greatest accuracy is assured with a Steep Front Wave Sonic measuring device on which there are United States Patents pending covering the methods and apparatus.

IG

INTERNATIONAL Geophysics, Inc.

ORGANIZED IN 1929

1063 GAYLEY AVE., LOS ANGELES, CALIF.

Deep Wasco Test Nears World Record

Definitely pointed for the Rio Bravo horizon which probably will not be encountered short of 13,000 ft., Continental Oil Co. KCL A-2 in sec. 8, 27-24 near Wasco already holds deep hole honors for the state of California and will soon pass the present world record depth of 12,786 ft. held by Gulf Oil Corp.'s Upton county, Texas, test.

With bottom at 12,741 ft., the former state record of 12,618 ft. established by Superior Oil Co. in sec. 11, 30-26, south of Greeley, has been surpassed and with present rate of progress the all-time record will be in the bag in the next few days. More credit is due the personnel of Continental because almost insurmountable difficulties had to be overcome to get below the 11,584-ft. level where a difficult fish caused a delay of more than two months and necessitated setting a 7-in. protective string at 11,570 ft.

California Crude Oil Production

For Two Weeks Ending January 11, 1938

Field	January Daily Quota	Average Daily Production	Excess
San Joaquin Valley			
Belridge—North	16,470	16,065	*405
Belridge—South	1,935	1,456	*479
Buena Vista	18,350	19,292	942
Canal	450	464	14
Coalinga—East-West	16,830	16,083	*747
Coffee Canyon	3,965	4,898	933
Edison	3,340	3,730	390
Elk Hills	8,730	10,729	1,999
Fruitvale	8,135	8,634	499
Greeley	3,850	3,866	16
Kern Front	10,120	10,007	*113
Kern River	5,275	2,290	*2,985
Kettleman No. Dome	80,045	80,687	642
Lost Hills	4,940	3,944	*996
McKittrick	3,795	4,372	477
Midway	48,425	56,843	8,418
Mount Poso	17,160	20,172	3,012
Mountain View	14,523	14,877	353
Rio Bravo	450	2,590	2,140
Round Mountain	10,385	13,159	2,774
Ten Section	3,830	3,815	*15
Other Fields	2,665	2,705	40
TOTAL	283,670	300,578	16,908
Coastal Counties			
Elwood	6,680	7,905	1,225
Rincon	2,800	3,264	464
Santa Maria	8,740	6,153	*2,587
Santa Maria Valley	10,000	6,405	*3,595
Santa Paula-Newhall	5,165	5,118	*47
Ventura Avenue	35,105	37,194	3,089
Other Fields	6,615	7,960	1,345
TOTAL	75,105	73,999	*1,106
Los Angeles Basin			
Alamitos-Seal Beach	8,950	9,252	302
Brea-Olinda	8,930	6,001	*2,929
Coyote—East	3,980	4,036	956
Coyote—West	9,335	9,792	457
Dominguez	25,340	30,623	5,283
El Segundo	9,715	19,450	9,735
Huntington Beach—New	16,175	19 080	2,905
Huntington Beach—Old	14,600	16,978	2,378
Inglewood	16,030	16,079	49
Long Beach	51,865	58,010	6,145
Montebello-Extension	7,610	7,831	221
Playa del Rey	7,260	7,587	327
Richfield	8,740	9,960	1,219
Rosecrans-Athens	2,960	5,564	2,574
Santa Fe Springs	35,570	40,509	5,039
Torrance	6,870	7,726	856
Wilmington	48,305	62,313	14,108
Other Fields	2,030	2,523	492
TOTAL	283,505	334,003	50,407
STATE TOTAL	642,370	708,579	66,209

*—Shortage.

State Drilling Report

Field	Company	Well	No.	Sec.	Twp.	Range
		NEW WELLS				
Coyote Hills	J-Perl Oil Corp.		1	21	3S	9W
Ten Section	Shell Oil Co.	KCL-B	52-31	31	30S	26E
Wilmington	Black Gold Corp.	Black Gold	7	32	4S	13W
	Hancock Oil Co.	Harbor	A-1	2	5S	13W
	Richfield Oil Corp.	Pac. Dock	5 & 6	3	5S	13W
	Richfield Oil Corp.	Pac. Dock	4, 10, 15, 16	35	4S	13W
	Richfield Oil Corp.	Pac. Dock	7, 8, 17, 18, 19, 20	34	4S	13W
	Richfield Oil Corp.	P & G	2, 3, 4	2	5S	13W
	Richfield Oil Corp.	Westside Comm.	1	35	4S	13W
	Richfield Oil Corp.	Star Drilling	1	35	4S	13W
	Richfield Oil Corp.	R. G. Terminal	3	35	4S	13W
	Richfield Oil Corp.	Richfield Term.	1, 2, 3	2	5S	13W
	General Petroleum Corp.	Harb. Comm.	2, 9	2	5S	13W
	General Petroleum Corp.	Southern Pacific	3	2	5S	13W
	General Petroleum Corp.	Blinn	2	35	4S	13W
Newhall	West Coast Dev. Corp.	Broughton	2	27	4N	16W
Richfield	Standard Oil Co.	Kraemer 2	26	32	3S	9W
El Segundo	Standard Oil Co.	Refinery	8	13	3S	15W
	Ohio Oil Co.	A. S. Gough	11	7	3S	14W
	The Termo Co.	Termo-Elsie	2	12	3S	15W
Belridge	The Texas Co.	J. D. Martin	3	22	27S	20E
Buena Vista Gas	Ohio Oil Co.	Kern Co. Land Co.	A-8	32	31S	26E
Greeley	Standard Oil Co.	Calder-Klassen	1	20	29S	26E
	Standard Oil Co.	K. C. 11	13	20	29S	26E
Fruitvale	Pacific O & G Co.	Panucchi	1	14	29S	27E
	Cal. Western Oil Co., Ltd.	K. C. L.	1	14	29S	27E
Coalinga	Franklin C. Grimes		1	12	20S	15E
Long Beach	Union Oil Co.	Oil Operators	4	13	4S	13W
	Edward D. Power	Power	3	20	4S	12W
	Richfield Oil Corp.	Bixby	4	13	4	13W
	Shell Oil Co.	Cresson Comm.	15	19	4S	12W
	Hilldon Oil Co.	Ambeco	3	13	4S	13W
Seepe	Garmack Oil Co.	Orcutt	1	28	5N	19W
Santa Maria Valley	Hancock & Bush	Rosenblum	2	25	10N	34W
	E. H. Moore, Inc.	Union Sugar	G-1	19	10N	34W
	E. H. Moore, Inc.	Union Sugar	H-1	19	10N	34W
	E. H. Moore, Inc.	Union Sugar	E-13	24	10N	35W
	Edeo Oil Corp.	Edeo	1	27	10N	34W
Kettleman North	K. N. D. A.		38	8	22	18E
	Standard Oil Co.		87	1	22S	17E
Round Mountain	Crestmont Oil Co.	Staley	2	8	28S	29E
	H. A. McDonald	Larkin	2	12	28S	28E
	Eastmont Oil Co.	Olcese	5	16	28S	29E
	Dwight G. Vedder	Bell	4	12	28S	28E
	Shell Oil Co.	Olcese-Lilly	2	21	28S	29E
		DEEPEN OR REDRILL				
Huntington Beach	Standard Oil Co.	Bets	8	34	5S	11W
Richfield	Union Oil Co.	Morse	1	29	3S	9W
Torrance	Woolner Oil Corp., Ltd.		5	14	4S	14W
Mount Poso	Sunset Oil Co.	Johnson	2	28	26S	28E
Montebello	Richfield Oil Corp.	Cioces	2	5	2S	11W
	Fullerton Oil Co.	McGinley	5	6	2S	11W
Mountain View	Petrol Producing Corp.	Noble-Petrol	1-A	30	30S	29E
	The Texas Co.	Mateo Smith	3	14	30S	28E
	Barnsdall Oil Co.	Morris	5	32	30S	29E
Kern River	Standard Oil Co.		2	21	28S	27E
Fruitvale	Trico Oil & Gas Co.	Knowles	2	23	29S	27E
Long Beach	The Texas Co.	Flower State	3	29	4S	12W
	General Petroleum Corp.	Clock	1	19	4S	12W
	Richfield Oil Corp.	Bets	1	19	4S	12W
	Stanton Oil Co.	Hoyt	4	19	4S	12W
Midway	C. C. M. O. Co.		8	9	32S	23E
	General Petroleum Corp.	Shale 14	20-A	14	31S	22E
		ABANDON				
Santa Fe Springs	Richfield Oil Corp.	Elliott	2	1	3S	12W
	The Texas Co.	Steinly	3	6	3S	11W
El Segundo	Union Oil Co.	El Segundo	1	18	3S	14W
Inglewood	Shell Oil Co.	Rindge	15	8	2S	14W
Elk Hills	Standard Oil Co.		85	35	30S	24E
Long Beach	Richfield Oil Corp.	Hass	3	30	4S	12W
Orange County	Shell Oil Co.	Harbeson	1	9	4S	10W
Dominguez	Shell Oil Co.	Reyes	57	34	3S	13W
Seepe	Clampitt & Withrow		11	1	4N	20W
Midway	Holly Development Co.	Evans	1	15	32S	23E
Mountain View	The Texas Co.	Mateo Smith	1	14	30S	28E
	Standard Oil Co.	Routsong	1	2	30S	28E
Fruitvale	Lamaro Petroleum Co.	Davis	1	21	29S	27E
Kern County	The Superior Oil Co.	K. C. L.	10	3	30S	26E
Coalinga	The Texas Co.		C-17	12	20S	14E

Summary	This Week	Previous Week	Total 1937
Total New Wells	12	47	1643
Total Deepened or Redrilled	7	10	710
Total Abandoned	5	10	576

New Dale Cement Dump

Dale Service Corp., 3520 Schaefer St., Culver City, Calif., is now marketing the new Dale Cement Pump, an improved type of bailer bottom specifically designed to dump cement in a well at any desired level without dilution of the cement mix by the well fluid.

The chief advantage to the operator claimed by the manufacturer is that the Dale Cement Dump has an unusually free dumping action which enables the cement to displace the well fluid without becoming mixed with it, as the bailer is raised. Thus, the cement mix is not diluted or contaminated by the muddy or oily well fluid, and the whole column of cement is said to set up in a very compact mass with uniform and exceptionally high strength.

Construction of the Dale Cement Dump is such that the cement emerges from the very bottom of the body, through a hole that is the same size as the full inside diameter of the bailer bottom. There are no valves or orifices inside the body to restrict the flow of the cement out of the bailer, thus the hazard of the cement bridging in the bailer and being later released accidentally as the bailer is being pulled to the surface is eliminated.

The Dale Cement Dump consists of a tubular body which can be attached to the lower end of a bailer made up of ordinary tubing or casing. The interior of the body is unobstructed by valves, orifices or other restrictions. While being run into the hole the opening in the lower end of the Cement Dump is closed by a thin disc which is held in place to retain the load of cement by pivoted trip levels attached to the body. The trip levers are actuated by a sliding collar encircling the body, attached to replaceable friction springs of the proper size to contact the wall of the casing or liner in which the cement is to be dumped. This method of dumping enables the operator to trip the mechanism at any point he desires, and prevents accidental dumping while running in the hole.

In operation, the disc is placed in the opening at the bottom of the Cement Dump body and is held securely by the trip levers. The friction spring assembly is raised on the body against the load of the compression spring and is locked in position by the locking springs. The bailer is then loaded with the proper cement mixture and is run into the hole. As soon as the bailer enters the pipe in which the cement is to be placed, the friction of the friction spring assembly against the walls of the pipe raises the assembly higher on the body and automatically releases the locking springs. When the lower end of the Dale Cement Dump reaches the level at which the cement is to be placed, the bailer is raised, the friction spring assembly remaining stationary in the pipe due to the wall friction, until the pivoted tripping levers contact the collar. Then they are spread apart and the disc is released from the bottom opening. The bailer is then slowly raised and the cement emerges from the opening in a compact mass, displacing the well fluid. Because there are no valves or orifices in the body, all of the cement is dumped where desired without spudding the bailer. Agitation and mixing of the cement with the well fluid is thus avoided and the cement is neither unduly diluted nor contaminated.

As the tripping mechanism is placed on the body above the point at which the cement emerges from the bottom, any number of succeeding loads of cement can be dumped without the bailer entering the previously placed cement. Agitation is thus avoided and the whole column is allowed to become a solid, compact, uncontaminated mass when it sets, with uniformly high strength assured.

Represents Jensen

A. V. Turner

Jensen Bros. Mfg. Co., who pride themselves with building pumping units and jacks offering every advantage of economical installation and operating cost, are represented on the Pacific Coast by A. V. Turner, Box 642, Huntington Park, who is always glad to explain his company's newest improvements in mechanical features applicable to their type of equipment.

Goes To Axelson

H. D. Collins

Announcement is made of the appointment of H. D. Collins, well known Tulsa oil man, as field engineer and special representative for the Axelson Manufacturing Co. of Los Angeles. Mr. Collins will make his headquarters in Tulsa and will cover the entire Mid-Continent area.

Mr. Collins brings to his new post a wealth of experience in every phase of oil production. He has spent more than 12 years with the Gulf Oil Corp. and has been prominently identified with Mid-Continent manufacturing operations for many years. As an authority on subsurface oil well pumping methods and practices Mr. Collins has contributed largely to A.P.I. standardization and development of modern underground pumps, sucker rods and tubing as well as having developed equipment for handling and caring for same.

Long active in engineering and A.P.I. activities, Mr. Collins is at the present time chairman of the Mid-Continent committee for standardization of pumping equipment. He is also a member of the Tubular Goods committee of the A.P.I.

Until his return to Tulsa early in the spring Mr. Collins will reside in Los Angeles studying Axelson manufacturing and operating methods while at the same time gathering information relative to prevalent production methods in California fields.

City Harbor Land Draws Huge Bid

Second award of municipally owned harbor lands was made to the Termo Co. by the City of Long Beach. The company, locally controlled and with offices on Cherry Ave. submitted a bid calling for $10,000 bonus and 60% royalty on gross oil produced from the four wells to be drilled on the tract. Basing their figures on wells now on production near the Ford plant, consultants of the Harbor Department estimated the city's share of the total recoverable oil should be approximately $670,000. Five acres are contained in the parcel.

Lane-Wells Rewards Nearly 400 Employes

Presents and cash bonuses were distributed to more than 387 Lane-Wells Co. employees at their Christmas party.

Bonuses amounted to $75,000 and were distributed on the basis of length of employment and rate of annual income of each employee. This marks the fourth consecutive year that bonuses have been distributed to Lane-Wells employees.

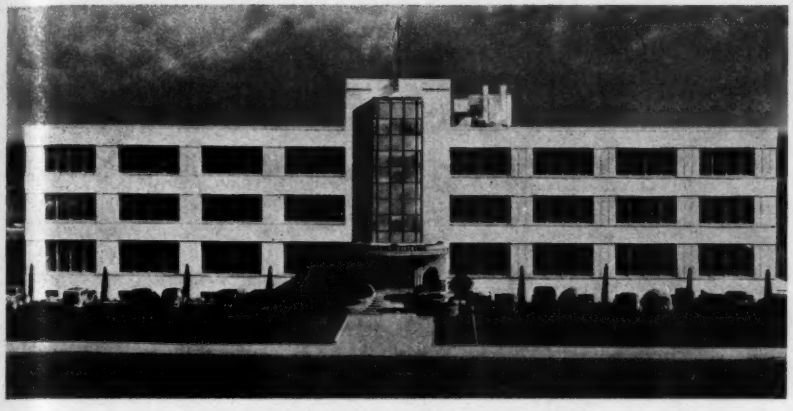
As part of the Christmas festivities, Harry Quintrell, oldest employee in years of service, presented a bronze plaque to Bill Lane and Walt Wells. Walter Wells, president, declared that his company's 1937 business was just twice that of 1936 and that orders on hand plus the general favorable business outlook predicates an equal increase for 1938.

Lane-Wells Co. is universally known for its gun perforator and well survey service. Their aggressive sales and merchandising efforts have brought widespread recognition and acceptance for their products.

The gasoline tax bill of American motorists is increasing at the rate of $100,000,000 a year.

The staff of Lane-Wells Co., Los Angeles, at Christmas party tendered to the personnel. Bill Lane is shown with package in his hand. Walter Wells acted as assistant Santa Claus.

E. M. "Ed" Ellis, H. C. "Hal" Hill, P. L. "Phil" Savage, R. E. "Dick" Johnson, of G-E's Oilfield Division.



New G-E Home for Oilfield Services

G. E. Centralizes Oilfield Services

Perhaps the General Electric Co. took a tip from the oil companies when laying out its new building and operation, as centralization of services and convenience of location seems to have been the keynote. The centralization included General Electric Co. offices and warehouse, General Electric appliance and merchandising offices, General Electric Contracts offices, General Electric Supply Corp. offices and warehouse. General Electric Co. and the General Electric Supply Corp. are probably of the most interest to the petroleum industry since both furnish electrical equipment and supplies to refinery and field. In view of this, excellent facilities are provided for customers calling on one concern to readily obtain information or goods from the other. Both concerns deliver from a single shipping room.

A long outdoor truck platform with steel roof is supplemented by a second platform which is completely indoors.

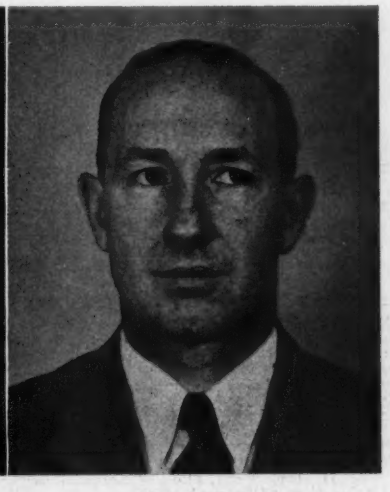
Telephone messages for the entire building are handled by a central switchboard so that all departments in the building may be reached with one call from the outside. An additional feature for saving the customer's time is an auxiliary telephone order board. It allows the person who desires to place and order for construction or appliance materials to call an order clerk and assures that such a clerk is immediately available without so much as going through the central switchboard.

For further convenience of customers, a central location was chosen, 212 N. Vignes St., which, though centrally located, is outside the area of heavy traffic. Anyone driving to the new building need not worry about parking for ample space is provided.

As might be expected, the building is outstanding from an electrical point of view. Three stories high, with floor space aggregating 140,000 square ft., the building's consumption of electricity is equal to that of an average town of 5000 people, the total connected load being 1189 kilowatts. The lighting system incorporates the newest developments in illuminating practices. Indirect fixtures provide an illumination of 30 foot candles or more in all offices. Heating is entirely electric.

To serve the oil industry, General Electric maintains a staff of technically trained engineers including E. M. Ellis, H. C. Hill, R. E. Johnson and P. L. Savage. Mr. Savage's especial assignment is that of rendering engineering assistance, developing new equipment, making tests and studying special applications in the California oil fields.

Theo. K. Sawyer



Robert P. Phillips

Appointment of Theo. K. (Ted) Sawyer and Robert P. Phillips to the engineering staff of Schlumberger Well Surveying Corp. is announced by R. Henquet, California manager of the company.

Mr. Sawyer is attached to the Bakersfield division as field engineer for the San Joaquin Valley. He was formerly employed by Alexander Anderson, Inc., in Bakersfield, and is widely known for his work in the San Joaquin Valley fields.

Mr. Phillips comes to the Schlumberger organization from the Division of Oil and Gas of the California Mining Bureau, as petroleum engineer. He is now attached to the Schlumberger main California office at Long Beach as field engineer for the Los Angeles Basin fields.

Business and Professional Directory

THE
HANCOCK OIL COMPANY
of
CALIFORNIA

PRODUCERS - REFINERS
MARKETERS

J. R. PEMBERTON
Oil Umpire
1110 Security Title Insurance Bldg.
Los Angeles, Calif.
TRinity 9705

MARTIN VAN COUVERING
PETROLEUM ENGINEER
405 South Hill Street
LOS ANGELES
CALIF.
MIchigan 8781

THE PETROL
CORPORATION
Producers and Refiners
Petrol Gasoline - Super Petrol Gasoline
Kerosene - Fuel Oils - Diesel Oil - Asphalts
Road Oils - Lubricating Oils
Distillates
4020 Bandini Blvd. - Los Angeles, Cal.

GRAYDON OLIVER
PETROLEUM ENGINEER
215 West 7th Street
Los Angeles, Calif. VAndike 3696

Classified Advertisements

CLASSIFIED ADVERTISING RATES

Small type: 50c per line per insertion. Count six words to a line. Minimum charge $2.00. All classified advertising payable in advance. Four consecutive insertions at price of three, if copy does not change.

24 times .....$ 7.50 per inch
1 time ..... 10.00 per inch

Not responsible for more than one incorrect insertion.

WATER DEVELOPMENT GUARANTEED

Water surveying service. David Romey, Phone Wilmington 1918, 587 Broad Ave., Wilmington, Calif. tf

REFINERIES AND GASOLINE PLANTS

Reconditioned or new heat exchangers, stills, fractionators, absorbers, condensers, at cut prices. Plants designed any size for any use W. F. Pyne, 909 S. Ardmore Ave., Los Angeles. DRexel 1412. tf

SCOUT REPORTS

NEW MEXICO LEASEHOLDERS: For reliable information on New Mexico developments take my weekly scout report. W. S. Patterson, Santa Fe, N. M

FOR SALE

No. 60 Armstrong All-Steel 3000 ft. Cable Tool Band Wheel Drill. 100 h.p. Gas Engine. 60 ft. Pat. Wire Line Derrick. With Tools. Subject inspection. $3000.00 as is where is, Grants, New Mexico. The Kaufman Co., 2020 Sacramento St., Los Angeles. 1-20-B

PIPE

5,000 ft. 10¼" O. D. Std., plain end pipe; 500 ft. 12¾" O. D. plain end; also 20" riveted, heavy and other sizes all in good condition.
IMPERIAL PIPE & SUPPLY CO., 2901 Santa Fe Ave., Los Angeles, Calif. Phone JE. 1104. tf

OIL PROPERTIES WANTED

WANTED—OIL PROPERTIES. MUST HAVE GEOLOGY. CAN FINANCE WELL THROUGH LEASE SALES. BOX 5, OIL WORLD. 1-20-D

FOR SALE OR RENT

For sale or rent complete No. 5, Union Tool Drilling Outfit, with 2200 ft. 8" Drill pipe and tools. Wilson Supply Co., Box 256, Santa Maria, Calif. 2/5B-2

GEORGE A. MACREADY
Geologist and Engineer
Core Orientation Service
Formation Tester Service
Phones: ADams 6786 3676 S. Main St.
Res. VErmont 8788 LOS ANGELES

MAPS
Large map of Los Angeles Basin oil fields and map showing all California oil fields. Price $15.00 each on paper and $20 each on cloth. Individual state oil and gas maps of Mid-Continent and Rocky Mountain regions Maps show geological cross sections at base. These maps indicate wells drilling, wells producing and abandoned, with depths.
All maps revised up to date of purchase.
JAMES C. BRANSFORD
1127 Story Bldg.
Los Angeles, Calif.
Phone: TUcker 7530

FOR RENT

Unitized 7½ R. B. Rotary Drilling Outfit. Complete with 12x12 Roller Bearing eng., Steel Sub. Base and two 113 h.p. boilers. This is an extra good outfit. Walter H. Mitchell, 1055 Bennett Ave., Long Beach. Phone 324-13. 1/20-d

Upholds Gasoline Deduction

Ruling that oil companies, to cover handling losses, can lawfully deduct 3% from the total volume of gasoline received within the state, Federal Judge Borah, on December 27 in New Orleans, restrained the State of Louisiana from collecting $500,000 in back gasoline taxes from three oil companies. If 3% of the gasoline is deducted, said the court, the remaining 97 per cent is subject to the state gasoline tax.

Oil Men's Calendar

January

24 Governor Marland's Petroleum Conservation Conference of Oil State Governors, Hot Springs, Ark.

February

14-17 American Institute of Mining and Metallurgical Engineers, Annual Meeting, Engineering Societies Bldg., New York.

March

16-18 American Association of Petroleum Geologists, 23rd Annual Meeting, Roosevelt Hotel, New Orleans, La.

23-25 American Society of Mechanical Engineers, Los Angeles, Calif.

April

13-15 National Petroleum Association, Cleveland, Ohio.

13-15 Petroleum Industry Electrical Association, Rice Hotel, Houston, Texas.

17-21 American Chemical Society, Dallas, Texas.

20-22 American Institute of Mining and Metallurgical Engineers, Open Hearth Conference, Buffalo, N. Y.

May

12-14 National Oil Scouts Assn. of America, Tulsa, Okla.

14-21 International Petroleum Exposition, Tulsa, Okla.

23-25 American Petroleum Institute, 8th Mid-Year Meeting, Wichita, Kan.

? Natural Gasoline Association of America, Hotel Tulsa, Tulsa, Okla.

? American Gas Association, Natural Gas Dept., New Orleans, La.

June

6 Oil Workers International Union, Houston, Texas.

The typical U. S. motorist, who earns less than $30 a week, pays an annual tax bill of $50 of which $30 goes for gasoline taxes.